EXCAVATING ENGINEER

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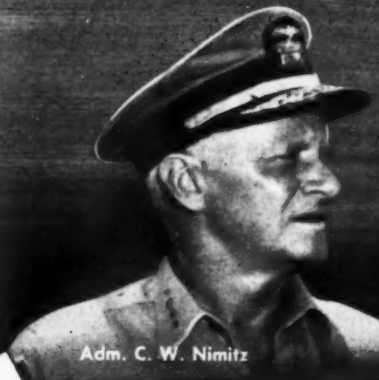
Gen. D. D. Eisenhower



Adm. C. W. Nimitz

Gen. Geo. C. Marshall

Adm. E. King

Adm. W. Leahy

Gen. D. A. Mac Arthur

Gen. H. Arnold

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Ernest J. King
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H. H. Arnold

Vol. XXXIX June, 1945 Number 6

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Published Monthly by
THE EXCAVATING ENGINEER PUBLISHING COMPANY
South Milwaukee, Wisconsin, U. S. A.

F. O. WYSE, Publisher — J. D. GRACE, Editor
D. B. REED, JR., Managing Editor — E. W. ARNDT, Art Editor
E. M. HEUSTON, Sales Manager

CCA Member Controlled Circulation Audit

Regular Subscription (payable in advance): 25 cents per copy, $2.50 a year: Canada and foreign, subject to publication policy, $3.50 per year. Special subscription: Upon written request on company letterhead this publication will be sent (not regularly) free of charge to companies, executives and supervisors engaged actively in excavating.

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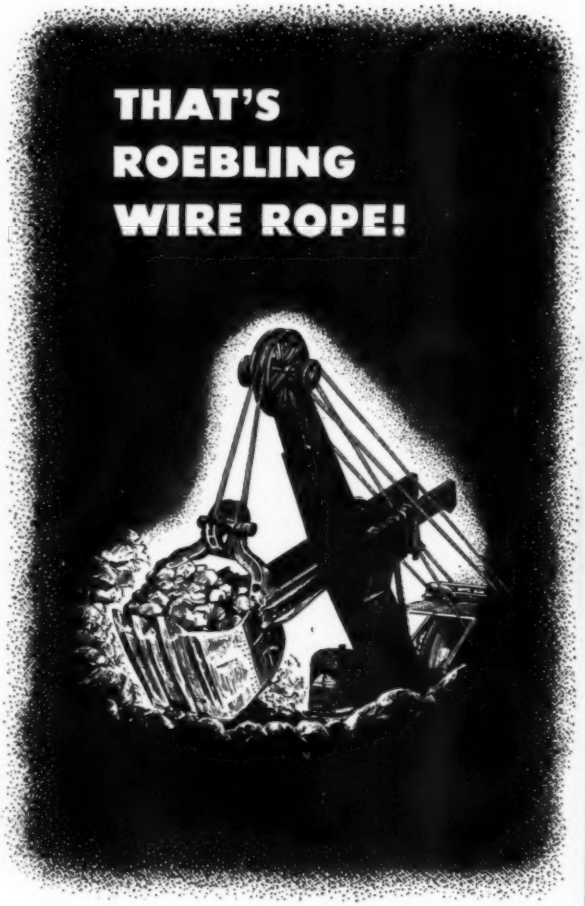

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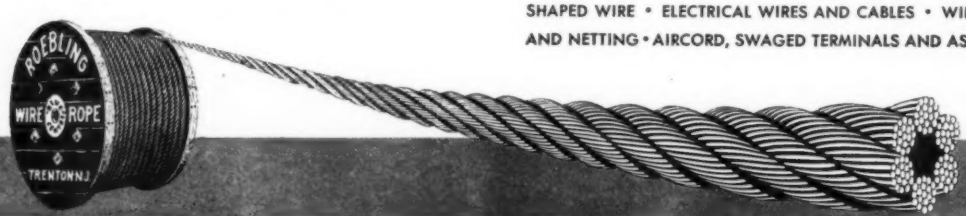

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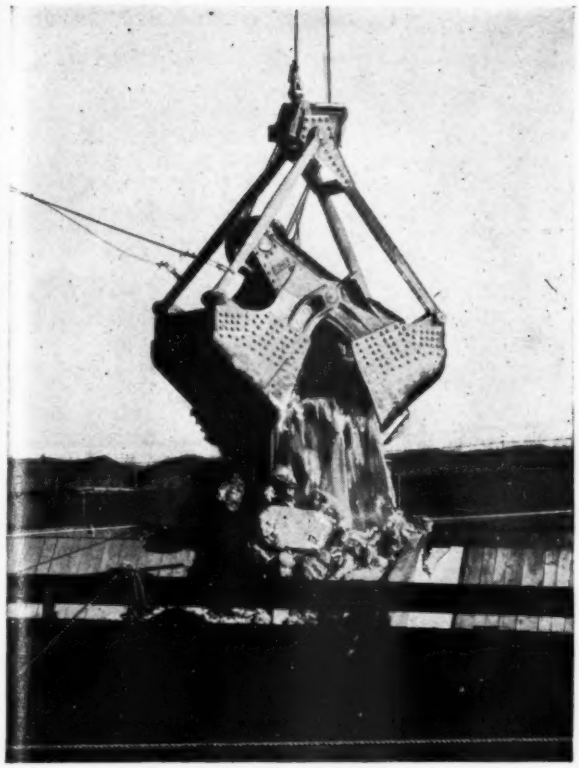

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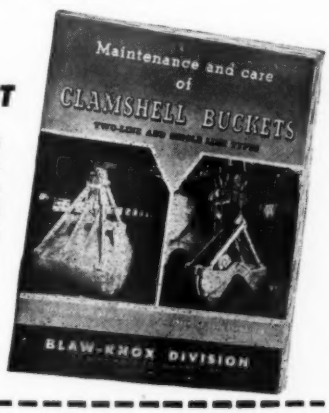

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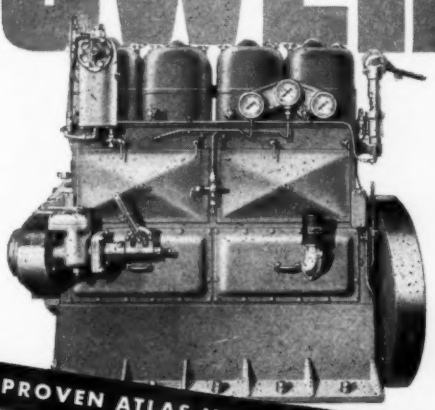

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Pratt's Star Performer

• Transit crane, with outriggers, unloads International tractor from gondola at one of local industrial plants where cargo carriers are attached to the tractors for the Navy. Lack of enough flat cars made it necessary at times to ship the tractors in gondola cars.

Pratt's Express Co. of Minneapolis has used its Bucyrus-Erie 22-B Transit Crane purchased in April, 1943, for seven days a week in all kinds of weather without a single lost-time hour.

THE WARM SPRING NIGHT the writer boarded a pullman for Minneapolis promised a beautiful, sunshiny day to get a story and some pictures of Pratt's Express Transit Crane at work. But a first glance through the train window the following morning dispelled notions of good working conditions for the whitened fields of deepening snow drifts were being rapidly piled high by a raging blizzard.

Minneapolis was snowbound from the worst spring blizzard experienced there since 1928. Hotel reservations meant nothing. All roads leading out of the city were blocked, trains were hours late, planes were grounded, and early busses that ventured from their terminals turned back after a few miles. Hotel guests couldn't get out and those wanting to get in had to await available rooms.

It looked like at least one day that would be wasted sitting around a hotel lobby. What would be the use of trying to get a story of a Transit Crane working on a day like this? Well, might as well call up Pratt's Express anyway and let Louis Ginsberg, superintendent, know we were in town . . . might be able to get some background information on the company and its equipment and then go out and see the crane at work after the weather cleared.

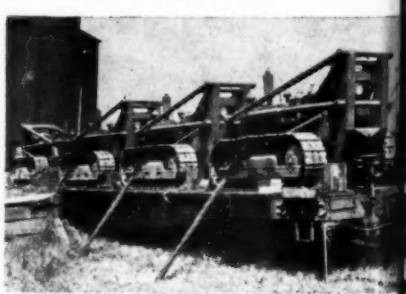
"Sure it's working today. Why not? That baby has been at work every day —seven days a week—since we bought her in April, 1943. That crane has never been laid up for any reason during that time and we certainly are not going to let a little bad weather spoil that record," Ginsberg answered our phoned inquiry. "It's out at the airport loading crated gliders onto trucks."

Well, if a raging blizzard wasn't going to keep that Transit Crane from work it wasn't going to stop us either. So, here's the story.

Pratt's Express Company, Inc., of Minneapolis and St. Paul, Minn., was organized in 1857 and specializes in the moving of all types of contractors' equipment and installation of industrial machinery in Minnesota, Wisconsin, Iowa, and North and South Dakota. It also serves shippers, wholesalers and merchants in the Twin City area in the delivery and collection of merchandise. W. A. Morse is owner.

To the 140 pieces of equipment operated by the company, including winch trucks and semi-trailers, Pratt's Express Company added a Bucyrus-Erie 22-B Transit Crane in April, 1943. The crane is equipped with a straight lattice-type welded construction boom, with a basic boom length of 35 feet, consisting of 17-ft. and

• International tractors equipped with cargo carriers ready for shipment to a Navy depot.



18-ft. sections, and insert sections of five, ten, and 20 feet that can be connected with bolted butt-type joints to give a maximum boom length of 80 feet. A safety boom stop is standard equipment on this crane. The maximum crane capacity rating of this machine, based on 85 per cent of tipping load and lifting in a radius of 12 feet, is 35,000 pounds lifting over side or over end with outriggers set.

General clearance dimensions of the 22-B, including wheel mounting, are: wheelbase, 162 inches; overall width with standard tires, eight feet; turning radius, 30 feet, and clearance height, boom lowered, 11'8". The total overall length of Pratt's Transit Crane in transporting condition, including basic 35-ft. boom, is 47'9".

Chassis Construction

The chassis is of alloy welded steel construction with the front bumper and the outrigger brackets welded as an integral part of the frame. The two outriggers on each side, in front and behind the four dual pneumatic wheels at the rear of the chassis, are of the I-beam type.

The front axle is spring mounted and the rear axles are tandem with dual worm drive providing smooth application of power with 10 speeds forward and two reverse with an equalizing beam mounting to assure full traction over rough ground. The ten tires used on the 20-inch cast steel wheels are 11.00 x 20-12 ply with all-weather tread.

The four rear wheels are equipped with Westinghouse air brakes that can be locked in engaged position. There is also a mechanical cable-operated parking brake on the propeller shaft.

Buda gasoline engines furnish the power for chassis and also for operating the crane. Both motors are

• Louis Ginsberg, superintendent of Pratt's Express Co.

equipped with electric starters. To avoid extremely cold weather starting difficulties, Pratt's converted the starter system to handle a 12-volt charge through the use of an extra battery.

The boom hoist is fully independent of all other functions giving complete power control of both raising and lowering. A silent lowering control pawl prevents the boom from lowering any faster than the front drum shaft turns. A brake makes it possible to stop the boom at any point or to lower it at less than drum shaft speed.

Pratt's Transit Crane is equipped with a 10-ton single sheave hook block weighing 250 pounds and has a counterweight of 3250 pounds consisting of 24 cast counterweight slabs in a carrier casting on the rear of the revolving frame. If necessary to meet highway weight restrictions while in transport one man can remove the counterweight slabs and transfer them to a truck without needing special equipment that would be necessary to remove a one-piece counterweight.

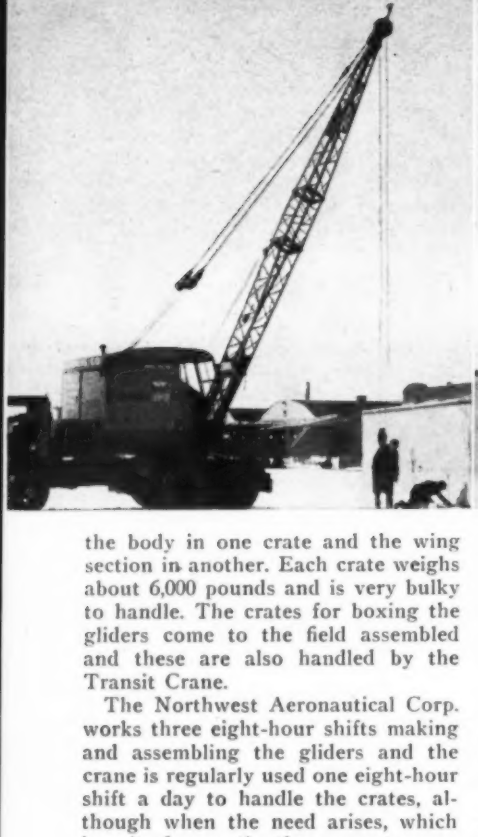
The open-throated boom permits rigging for two, three, or four parts of line without the necessity of removing sheave guards. Even with the boom at a high angle, lines can pass behind the sheave without fouling the boom. Straight boom center extensions to Pratt's Express Co. Transit Crane can be applied without removing. sheaves, guards, or suspension ropes, or any of the point machinery.

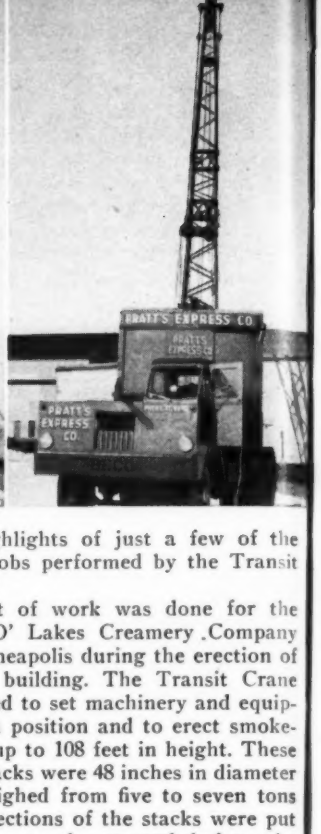
Although the Bucyrus-Erie 22-B transit Crane is convertible to clamshell, dragline, shovel and dragshovel work, Pratt's Express Co. does not use its crane for excavating work.

Handling Gliders

As was previously mentioned, the Transit Crane was working at the Wold Chamberlain airport between Minneapolis and St. Paul at the time of the writer's visit. Gliders for the Army are being made by the Northwest Aeronautical Corp. in a plant located at the airport. Pratt's Express Co. has the contract for loading the boxed gliders onto trucks for hauling to the railroad for shipment. The crane also handles the gliders around the plant grounds and stockpiles the crated gliders awaiting shipment. Each glider is packed in two boxes,

• Below: Steel sheet piling protects embankment from being washed away by Cedar Creek. Right: Set on cribbing, the Transit Crane works as a pile driver to drive sheet piling.





• Handling boxed gliders at the Wold Chamberlain Airport plant of Northwest Aeronautical Corp. Left to right: Rigger takes hitch on boxed glider, rides crate as it is raised by Transit Crane, and crane carries crate to stockpile for later loading to truck.

the body in one crate and the wing section in another. Each crate weighs about 6,000 pounds and is very bulky to handle. The crates for boxing the gliders come to the field assembled and these are also handled by the Transit Crane.

The Northwest Aeronautical Corp. works three eight-hour shifts making and assembling the gliders and the crane is regularly used one eight-hour shift a day to handle the crates, although when the need arises, which is quite frequently, the crane stays on the job 10 or more hours per shift. Both the plant and the crane operate seven days a week. Military security makes it impossible to tell the number of gliders handled by the Transit Crane per day, but it can be told that the crane is kept busy.

Earl Bernstein, crane operator, and William Leckley, driver, have been with the Transit Crane since it was purchased by Pratt's and they have great pride in keeping the Transit Crane clean and in good operating condition. In spite of its daily use for the past two years the Transit Crane looks almost as clean as the day that it left the factory. The paint is in excellent condition and the original Goodrich tires are still on the machine. Greasing equipment is carried with the Transit Crane and the driver keeps the machine well lubricated during "spots" in his daily work.

• Transit Crane is used to move gravel plant equipment in a distributor's yard in Minneapolis.

The basic 35-ft. boom length is used in handling the gliders and the boom is kept at about a 60° angle for most efficient operation. No outriggers are necessary for this work.

The number of men that accompany the Transit Crane on any particular job is entirely dependent upon the type of work to be done. One rigger in addition to the operator and driver is used on the job of handling the boxed gliders. The rigger puts a sling around the crated glider, rides the crane hook to the top of the crane, hooks onto the cable and then rides the crate as the crane swings it into position, either on a truck or on a stockpile. After the crate is in position the rigger unhooks and rides the hook to the ground.

Versatility of Uses

Prior to taking over the contract for the handling of the crated gliders at the airport recently Pratt's Express Co. proved the great versatility of the Transit Crane through the various uses to which it was put. Jobs performed with this equipment include unloading equipment from railroad cars, moving and installing machinery, dismantling and erecting huge storage tanks, erecting tall smokestacks and driving piling. Following are highlights of just a few of the many jobs performed by the Transit Crane:

A lot of work was done for the Land O' Lakes Creamery Company of Minneapolis during the erection of a new building. The Transit Crane was used to set machinery and equipment in position and to erect smokestacks up to 108 feet in height. These steel stacks were 48 inches in diameter and weighed from five to seven tons each. Sections of the stacks were put together on the ground before the complete stack was raised into position. Outriggers were used on this job and the boom was extended its maximum 80-ft. length.

Erecting smokestacks is a common use of the Transit Crane and all these jobs were handled in a similar manner. The stack sections are put together on the ground and then the completed stack is hoisted into position.

Often the crane has been called out on night work so as not to interfere with regular daytime routine. Typical of these night-time jobs was the installing of two ten-ton heating boilers in the Chicago, Milwaukee and St. Paul Railroad depot. Using a 35-ft. boom and outriggers the Transit Crane removed the two boilers in the building up through the second story and the roof of the depot and lowered the new boilers down into position through the roof.

The mobility of the Transit Crane is typified by a job done for the Maple Island Farm Creamery at New Richmond, Wis. The crane traveled to and from New Richmond, a distance of 50 miles each way, hoisted an 18-ton water tank 40 feet long and 11 feet in diameter to the roof of a building and completed the entire job, including travelling time, in 20 hours. Special riggers were taken on this job.

On another occasion, a job that typifies most tank-handling work, the Transit Crane took down a steel tank

34 feet high and 24 feet in diameter at the Bransdale Oil Plant in Minneapolis, hauled this tank to another location and put it up again. The job was handled by cutting the tank in two horizontally and then moving each half separately and then welding the two sections together at the new location. Other tank dismantling jobs are handled by cutting the tanks in several sections and moving the tanks by section.

About a year ago the City of Minneapolis had trouble with Cedar Creek washing away an embankment and so contracted with Pratt's Express Co., to drive sheet piling along the bottom of the embankment to prevent further washing away. The Minneapolis, Northfield and Southern Railroad tracks are laid on an embankment on the other side of Cedar Creek and trains running over these tracks loosened the embankment and the creek washed it away, and so the railroad followed the example of the City of Minneapolis and also had sheet piling driven in along the bottom of their right-of-way embankment. Pratt's Express Co. was also given this job. The Transit Crane was used as a pile driver with a head borrowed from the City of Minneapolis for these sheet piling driving jobs.

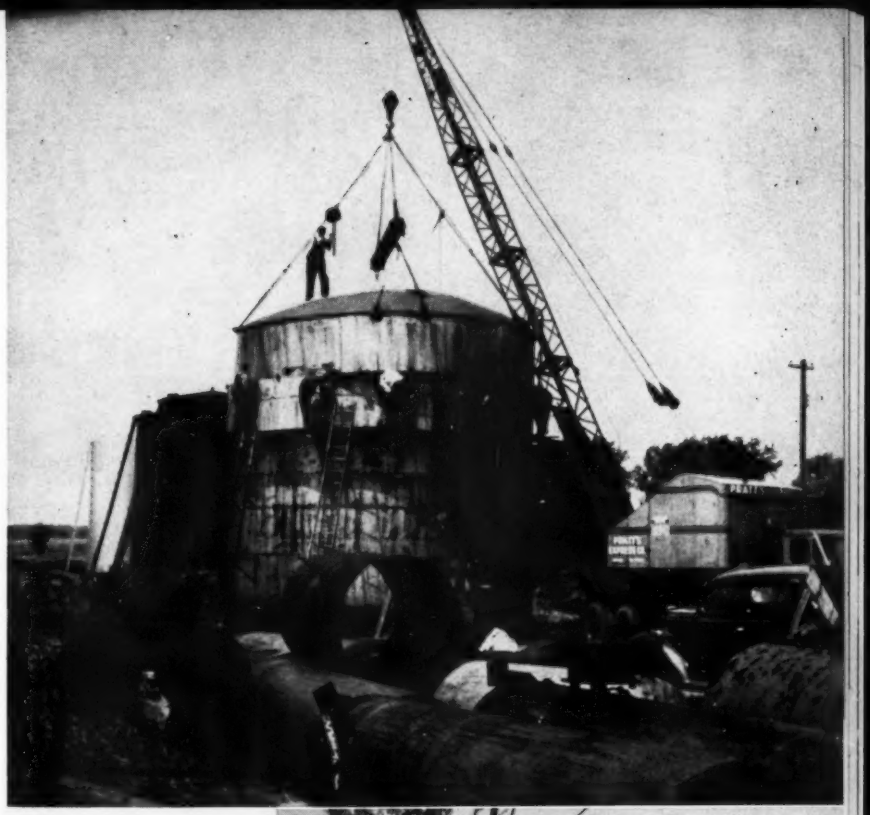
One of the unusual recent jobs handled by the Transit Crane was unloading crawler tractors from a gondola car at one of the local industrial plants. This plant put cargo carriers on the tractors for the Navy and due to lack of enough flat cars to handle the shipment of tractors from the factory to Minneapolis it was sometimes necessary to ship the tractors in gondola cars, making it impossible to unload the tractors by their own power. The Transit Crane hooked onto the tractors in these gondolas and lifted them from the cars to the ground.

Pratt's has special permits from the cities of Minneapolis and St. Paul and from the state highway department to allow the crane to travel over city streets and state highways.

Outrigger blocks are carried on the Transit Crane at all times. The foundation blocks are 16 inches wide, six inches high and three feet long and 8"x8" and 6"x6" blocks are used on top of the foundation blocks. A canvas covering protects the outrigger blocks from the weather when they are not in use.

While travelling the boom is carried in a lowered position over the chassis motor and is guided by a metal rack erected behind this motor for this purpose. To prevent wear from the steel boom rubbing on the rack, pieces of automobile tire casings

(Continued on page 349)



• **Top: To move this 34-ft. high tank 24-ft. in diameter it was cut in two. The Transit Crane is removing the top section. Right: Bottom section of tank being moved. Sections were trucked to new location and tank was welded together.**

• **Below: (bottom) Pieces of auto tire casings are used to prevent wear from steel boom rubbing on carrying guide. (Top) Quarter-inch corrugated steel mud guard installed on Transit Crane over rear tandem wheels.**

• **Tank being taken down in several sections. Crane is used to lift sections to truck for hauling to new location where it is again erected.**

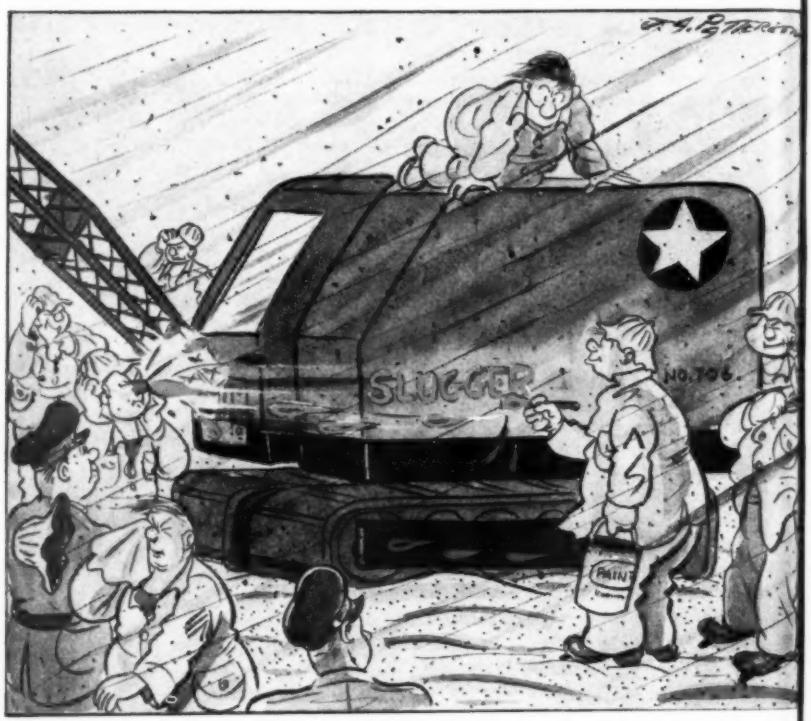
SLUGGER

By CAPTAIN J. R. RYALL, C.E.
Illustrated by J. A. Patterson

THEY CALLED HIM "SLUGGER". And he looked it. Big, ugly, tough and brainless. But like most weak-minded soldiers, he never knew how to quit. He could grab a tractor tread in his tough scarred arms, lift it off the ground and drop it on a truck so gently you couldn't see the springs take up the load.

Slugger is an old friend of mine. I first saw him at an airfield in India. He didn't have any scars then. He didn't even have a name. Some G.I. christened him Slugger and painted it in red paint along his side. When I first saw him, he looked like any other crane. A little newer, perhaps, and a little stiffer. His paint was new and bright O.D. and he carried his boom easily and loftily. I didn't pay much attention to him. There's usually too much to do wrestling heavy equipment around in a monsoon to get sentimental about a hunk of machinery.

But I saw Slugger again in China the other day. A little scarred, bent here and there—his once proud name smeared with grease and wearing, but his big heart roared out the same old defiance and his big boom swinging tons around as if they were ounces. He's been through more war than most of us read about and he's beginning to show it—but he's still in there slugging 20 hours a day. When I saw him the other day there were a half dozen Chinese coolies looking at him with awe in their eyes, but the old slugger never batted an eye. He just scorned them as if he knew he had the strength of ten thousand of them. I looked at his old scars. They were familiar. Because I made them with a cutting torch not so many months ago. They were covered over with fish-plates and beneath were the welds. Big, knobby lumps of metal like scar-tissue on a broken bone, I had seen him taken apart into a confused mass of pieces, his frame dismantled and cut, the big Brockway that carried him torn apart—it looked like a Dali painting. I rubbed my fingers over the scars and my hands touched scars I hadn't made. Raw, ragged holes. Slugger's battle scars. They had been made by flying pieces of Japanese bomb fragments. How they must hate that tough old workhorse. And well they might, because day after day, he's in there fighting them. Day after day his big boom points to Tokyo as he inches forward slowly, inexorably boring his stolid way into the heart of a voracious empire. On his cab is the big combat star, which he wears like a veteran—and like any soldier he wears his dogtags. Serial Number 706. That's Slugger.



Some G. I. christened him Slugger and painted it in red along his side.

Maybe it was just because he was carrying at the moment about twice his rated load, or maybe it was just

A big unglamorous hard-working war hero who gets n medals and will never march in a victory parade, but wi end his battle-scarred life in China, tells of his experienc in the fight against the Japs.

that his springs are getting a little wear, but as I looked at him he seemed to nod at me as if to say, "How'm I doin', pal?" A corporal was looking at me so my lips didn't move, but something inside of me answered him. "You're doin' fine, Bub, fine. Never dreamed you'd get to China did you? Slugger. Never thought you'd sweat out the Hump, did you? you big overgrown mug. Glad to see you made it, fella. Golly, if you could only talk."

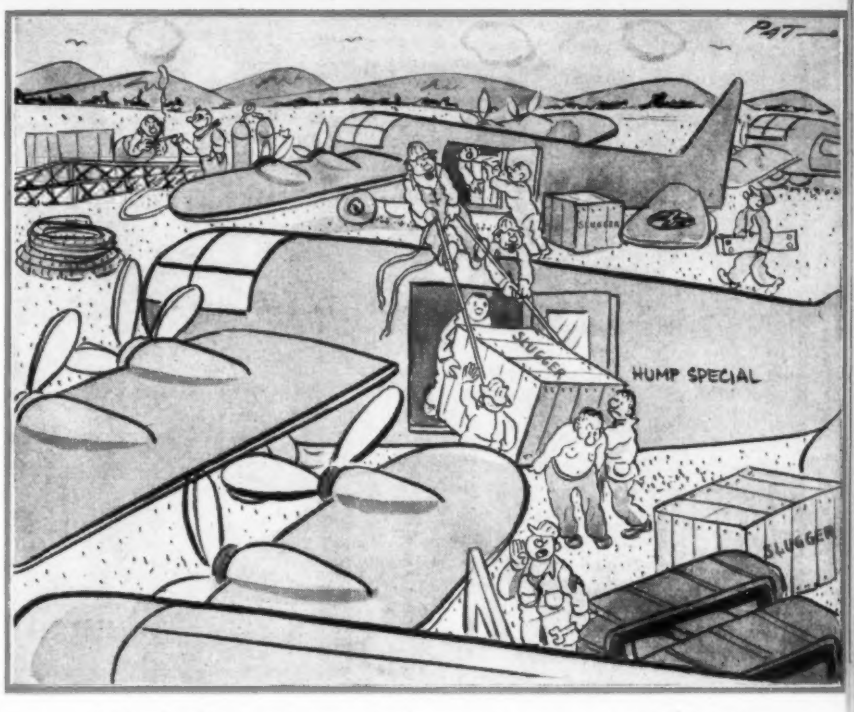
His big heart raced a little. It sounded like a chuckle.

"Why you bow-legged baboon. Can't talk, eh? Buddy when you've been through what I have, maybe YOU'LL be able to talk, but until you have, you let me do the shouting around here." He wasn't using words, but that's what he said. I sat down on a rock and pulled out a cigarette.

"I was a pretty fancy soldier last time I saw you," he went on. "I guess I looked like a rookie with my fancy clothes and all that waterproof dressing those guys back in the States smeared over me. But after a day at your place I suddenly knew there was a war going on. And when I saw those birds cutting me up in little pieces, I said to myself, 'Oh, oh—this is It. Now they're going to put me in the Air Corps.' Me, a tough, rip-snorting Engineer in the Air Corps. Ain't it awful! When they had me chopped up into so many little hunks they had to number the pieces and pack me into boxes and bolt me onto skids. Imagine me in a skid—or bolted down to anything! Suddenly it dawned on me. 'Holy mackerel,' I says to myself, 'these brass hats are sending me over the Hump.' And brother, then I was really scared and I ain't kiddin'.

Loaded to Planes

'Well, anyway, they start loading me on to airplanes. Not one airplane. It seemed like a million of the things. Me wrapped up in aluminum. I could punch a hole in that thin stuff if I rolled over in bed. But I wasn't rolling over in bed. Not on this trip. Or it would be my last roll. Ye gods, but was I scared. Anyhow they got me loaded and tied down and started taking off. Now, I ain't no featherweight and nobody ever expected me to fly so when those planes started slammin' down that runway, I felt like I was going to wind up in the scrap metal drive, after all. But these Air Corps Joes aren't so bad—although one of them never did take off really. He got into the air by lifting his wheels up, so help me. There were a lot of them. I remember a guy named Peter from Milwaukee and a little red-headed runt from someplace in Montana and a fancy-pants blonde little egg from Columbus, Ohio. They called him 'Butch'. Maybe because he looked like a sissy. But he wasn't no sissy. Leave me tell you about that guy. I made a trip with him and it was a dilly.



"Oh, oh, this is it — now they're putting me in the Air Corps."

"We take off from Assam, see. And the weather ain't so good. The weather ain't never good around the Hump. The weather map says it's cold. Anyhow we clear the end of the concrete by a hair's breadth (although maybe no hair was ever that thin), and start grabbing some altitude. The old motors were roaring sweetly enough, but any old motor that pulls me—or even a little part of me is pulling a helluva load and don't you forget it. Well, we get up to around 12,000 and it begins to soup up. This blonde-haired guy named Butch who's driving this here airplane, he turns to the other guy and says, 'Doc, let's go on oxygen now, I'm going to climb out of this overcast.'

"'Overcast!' I say to myself, 'the guy's Hump-happy. You could get out and walk on the stuff.'

"Anyhow, up we go and I look down. I shouldn't of done it. Down below was the Rockpile—the Hump. Big ragged mountains. And the damn things are as high as the left wing-tip and we're at 15,000 and still climbing. Then it begins to get cold.

"After a little while this airplane driver named Doc turns to Butch and says, 'We're icing up a little.'

"Icing up a little. You should see it. The windshield one minute is clear as crystal and then a second later the wiper blade is skidding over about a half inch of the stuff.

"Butch turns over to Doc and he says, 'Doc, I do not like the feel of this airplane. We are carrying about a ton of ice and the controls of this airplane are very sloppy, indeed. Leave us get the hell out of here at once!'

"So he gives her about two inches more of manifold pressure and we climb. But that needle goes up so slowly, I begin to have a great yearning that I was back in that nice depot in Marion, Ohio again.

Ice Forms on Wings

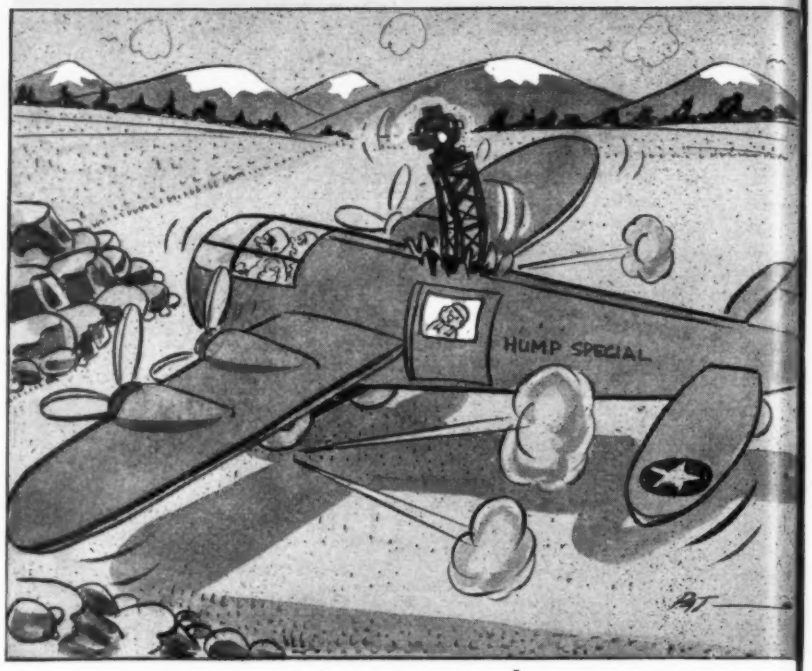
"We break into the clear at 20,000 feet and by that time there is three inches of rime ice on the wings, the motors of this here airplane are doing 2400 r.p.m.s and the manifold pressure is around 39 inches. And the very amusing part of this situation is the fact that this airplane at the moment is doing a very slow 110 miles per hour and flying level.

But the sun begins to melt the ice, although it takes about a year to do it and we pick up some speed, but I have considerable difficulty in getting my injectors out of my exhaust manifold which is something like chewing on your heart.

"Then it begins to get dark. And while it is still beginning, it is already dark and I take a very quick look at this little blondy named Butch, but he is squinting at some dials and he looks almost happy. I gather that we are over the Hump and letting down

on the other side because the airplane drivers take off their oxygen masks and begin looking around the sky. But they are not saying 'Star light, star bright, the first star I see tonight.'

"No, pal, they are looking around for Japanese bombers who have a very nasty habit of tagging along behind a transport to throw off the detectors and thereby catching whatever is on the ground with their drip-pans down. Also there are Jap fighters around sometimes to knock off little items like yours truly, because they are very unhappy about having guys like me working for the United States Army and especially for the Engineers who are just as likely as not to build an airstrip, just like that, right on top of a Japanese command post and next day begin unloading supplies to blast hell out of them. You see, the Army has got to have me to handle the big guns and the heavy stuff or they would move at the pace of a jeep which is very slow, indeed, if we are going to get to Tokyo before the next election.



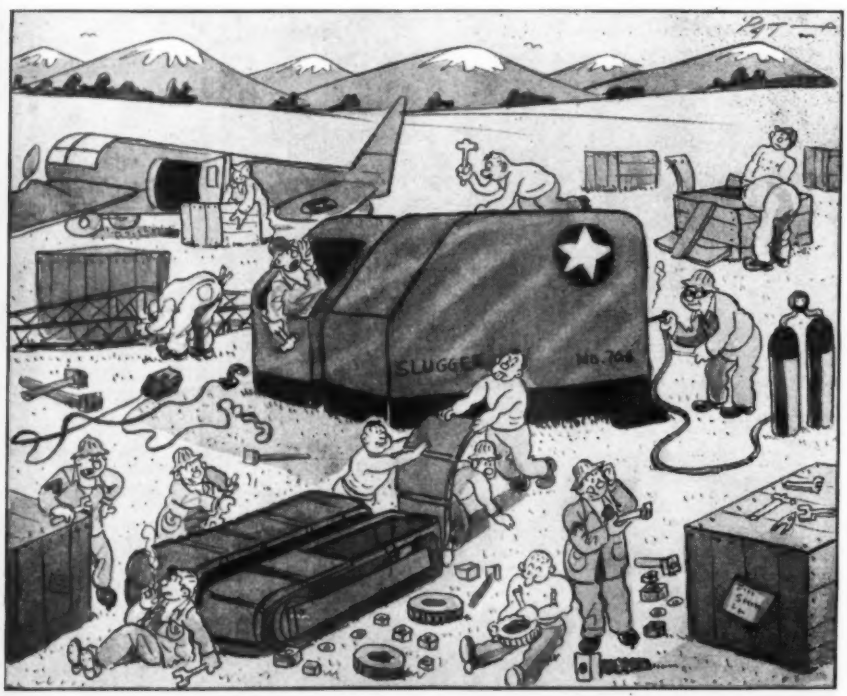
"We stop about two inches from a pile of rocks."

Short Strip Landing

"Pretty soon we let down on what the Chinese laughingly call an airfield. It is a paddy with rocks on it and outlined with flares. We hit like a feather, although I expect to keep right on going through the floor, and we stop about two inches from a pile of rocks, from which they are going to make the strip long enough to land on tomorrow or next day. This guy Butch is strictly from ignorance for trying to land on a short strip but he is after some oak leaves for his medals so he does not mind short strips. I am very confident those oak leaves are showing up on his Purple Heart does he not stop such landings on short strips. But he has got to haul in cranes like me with buckets and booms and draglines or he does not have long strips so he is kinda anxious that I get to China so he can make nice long strip landings and B-29's can make long-strip take-offs which little occurrence is annoying the Japanese no end.

"In about three days all of my parts have arrived and the G.I. Joes begin to weld me together again, which is a major operation and a tough one because these jokers have got to fly the welding equipment in likewise. And also food and ammunition. All of which takes many short-strip landings which causes Butch's hair to turn grey and Doc's to fall out which, also, is a very sad item to have to write home to the little babe in East St. Louis, but by so doing they are keeping some G.I. Joes from taking one in the belly which is a very nice thing which Butch and Doc are doing.

"Anyhow, these Engineer Joes are right on the ball and in one week I am loading so many trucks with gravel, I am causing a depression in this hunk of China as I am putting so many coolies out of a job. Pretty soon troops are landing on this long-strip airport which me and a couple of Engineer G.I. Joes have built and it is beginning to look like V-day in this part of China.



"The G. I. Joes begin to weld me together again."

Jap Bombers Come

"But this very nice situation does not last very long. The Japanese get wind of what is going on and they send over some bombers to break up the party, because they fear said party is going to turn into a wake. Their wake. Because they are not such dumbbells that they do not know what we are trying to do. But I will tell you about that later. The night these bombers show up we are expecting them because in the morning we see a Jap named Photo Joe at

about 40,000 in a souped-up Zero taking snapshots of us. So we get our stuff into revetments, me included. When they come over at dusk, I am pretty well hidden, but they spot me and try to blast me to blazes with a couple of heavy ones, because, like I said, they do not like to see me around as I am a thorn in their side by building long strips and unloading planes so fast they are not able to catch the planes on the ground with their flaps down. So I take a couple of slugs in my cab and one hunk of bomb smacks into my motor but it is a very tough engine which takes more than one Japanese bomb to annoy. But as soon as the bombers go away I am right back on the job which is now filling in craters which they have made in the runway of our long strip and I work all night and all the next day and the night after that. We do not have night and day shifts. We do not have any shifts. The G.I.'s work until they cannot work any longer and then they lay down and sleep for a couple of hours. I do not have to sleep, so I got to keep going which is not so good for preventive maintenance but is plenty good for building long strips in one helluva hurry.

"Finally we get our long strip built and I am wondering what all the rush is about when one morning I see an airplane making its pattern around the field and what kind of an airplane does this one turn out to be but a B-29 which they do not call a Superfortress for nothing. This B-29 comes in for a landing and when it makes its approach I see immediately that this is going to be a long strip landing, indeed, and you do not make short strip landings with these babies like you do with transports unless your family owns plenty of stock in the Western Union and you want to increase their business. While this one is landing I see some more of the same brand of airplanes making their patterns and I say to myself I am very happy I am not a stock-holder in any Japanese insurance companies as these companies are going to be filing suits in bankruptcy very shortly.

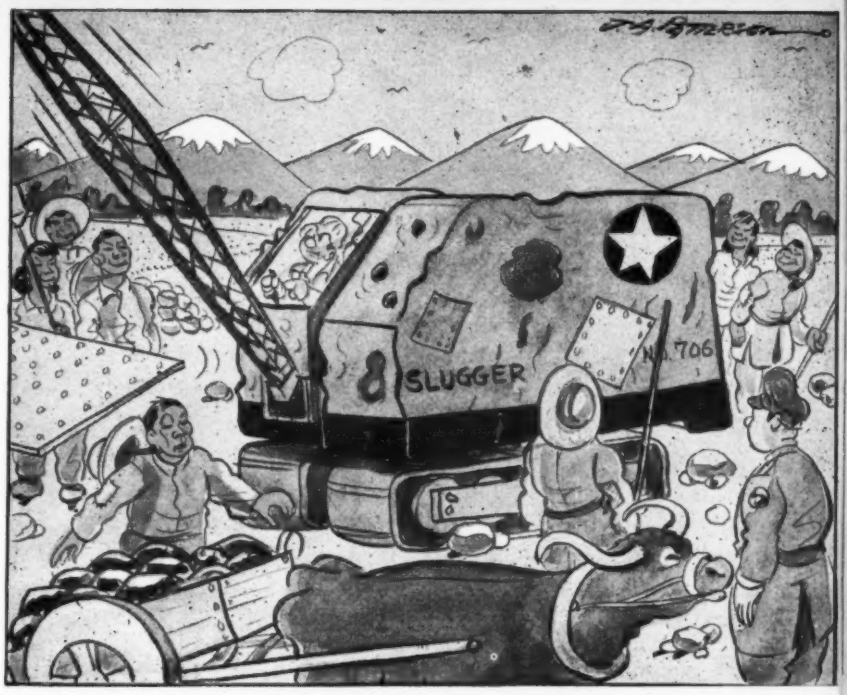
"I guess you have read the rest in the newspapers, but as I see you are an Engineer like myself maybe you have not learned to read. I can tell you that a lot of these journalists are working overtime telling the taxpayers what a pasting Japan gets in the next few weeks. They are delivering so much scrap metal to the Japanese that I hear Hirohito is planning a project to use it to make a couple of battleships until he finds it is in such little hunks and so mixed up with Japanese airplane factories that it is not economical to make battleships with it. In fact it is not economical to do anything except get the hell out of the way when we deliver the stuff.

"But when these newspaper guys throw around the English language in their stories, do I get a mention? I do like hell. Because I am not a glamour-pants like these B-29's, I do not get my name in the papers. But I wish to state that do I not get over the Hump and make long strip landing fields, B-29's do not make long strip take-offs until 1948 or thereabouts which is too long to wait.

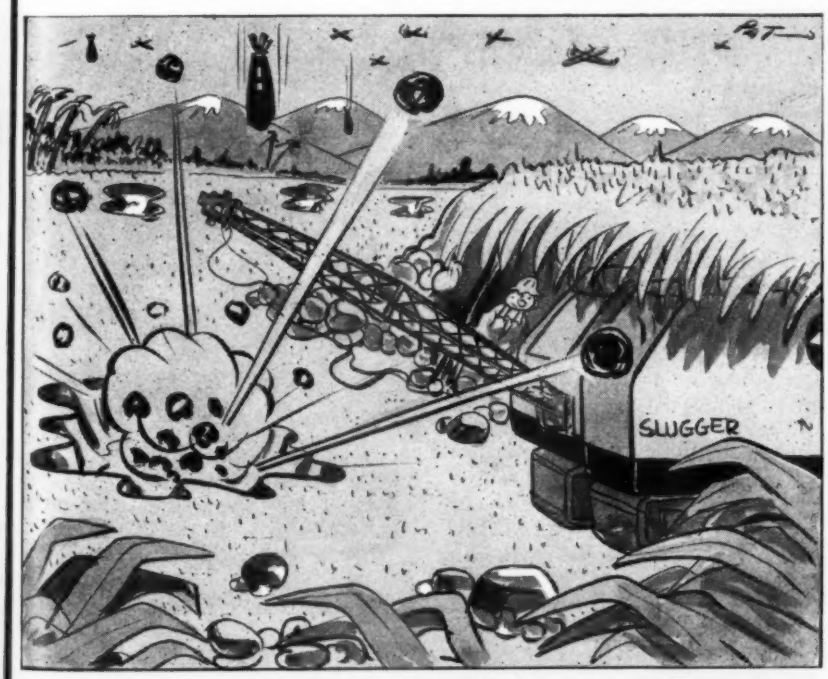
"And do I get medals? I do like hell. I get twice as much work because now they have bulldozers, and tractors and trucks and bombs and ack-ack guns and I am in the present business of hauling this stuff around so they make this long strip landing field so long it looks like National Airport. I do this, because do I not, these Air Corps guys would not even be able to get to the P.X."

And with that the old slugger swings his boom up and says, "So

(Continued on page 349)



I saw Slugger again in China—there were half a dozen Coolies looking at him.



"I'm pretty well hidden, but they spot me and try to blast me."

• Left: Two-bench excavating system used by Seabees. The bench in the corner has been shot and loosened. Below: This International TD-18 tractor mounted with Bucyrus-Erie Bullgrader cleans up ahead of the shovel operation behind. This area will be drilled and shot.

Seabees 'Borrow' a Million Yard Mountain

Seabees use modern excavating equipment to dig and haul an average of more than 200,000 cu. yds. of coral a month for base material for roads, airfields, camp sites and fills on Guam.

By R. P. DAY

OROTE PENINSULA, sticking out from the north end of Guam in the Marianas Islands, was a hell of a mess that July day of 1944. It was D plus 1. The shelling and bombs had gutted roads, torn up the Jap airstrip, wrecked the Pan American Hotel and all the other buildings around.

In the midst of explosions, confusion, death and destruction a couple of Seabee officers plodded across the base of Orote Peninsula, oblivious to snipers and the rattling fire of skirmishes farther back. With that queer detached look of men who have something important on their minds, these men walked on until they came to the top of a hill, whose outcroppings caused one of them to exclaim, "This is it!"

They were looking for a borrow pit. Nothing more. Just a borrow pit to furnish all the base material for roads, airfields, camp sites and fills in that vicinity. That borrow pit was important. Until it was opened up and trucks started rolling into the blasted wreckage of roads, most machines and heavy equipment the Americans had brought along couldn't roll.

As the officers hurried back to headquarters with a 25-pound chunk of material, they were already planning a way to push this job to its limit. This battalion had been through this kind of experience before. It knew that the ultimate demand for roads, fills and borrowed material would exceed preliminary estimates by maybe 200 per cent. It knew that long before it could possibly get its equipment unloaded and ready to go that all the mad agencies of war would be on its tail yelling, "What's the holdup?"

A Caterpillar D-8 tractor came ashore. They put it to work repairing some of the road damage as best it could. An International TD-18 Trac-Trac-Tor, carrying both a Bucyrus-Erie hydraulic Bullgrader and a Bucyrus-Erie Model P24 cable power control unit, because Seabee machines have to be versatile enough to grade and tow scrapers too, was sent right up to the mountain to begin clearing palm trees, mangli and guava bushes away from the 12-acre borrow site. When another Caterpillar D-8 with a LeTourneau blade got ashore it was sent right up to help the TD-18.

But the fighting surged. The machines had to be diverted for a week or ten days to help out. It wasn't until D plus 20 that the Seabees could marshall their full strength of men and machines to move that mountain.

Clearing Site

The original plan for excavating one and one-half million cu. yds., using power shovels and trucks, was followed faithfully. Although the jungle growth on top of the borrow pit was thick, the two tractors cleared the area in less than a week. Bullgrader operation was dangerous then. The areas hadn't been swept with mine detectors, and dud shells and unexploded grenades were plentiful enough to cause many a scare. Fortunately, the Seabees stayed alert and located most of the high explosives before the machines could set them off, and to this day the operators will tell you it wasn't all

• This Ingersoll-Rand FM2 wagon drill helped shovel production by drilling the holes for blasting.

luck—God was helping out on that part of the job.

The brush was pushed back in big piles away from the site. Several unsuccessful attempts were made to burn the green, water-soaked piles. Only the smaller twigs burned. The rest molded and started to decay; a fast process here. Two Northwest 1½-cu. yd. shovels were then brought in with a fleet of 20 GMC dump trucks, and they began loading out a 15-foot face. This work was done prior to blasting.

In appearance and texture, the material in this borrow pit is new from a geological standpoint. It is a soft calcareous formation, as white as ordinary Missouri fire clay and about the same digging characteristics as decomposed granite beds in Arizona in the United States. It is definitely a sedimentary formation. Its coral-like appearance is the same as the coral rock still found in the harbor below sea level. In ages past, this mountain was pushed up out of the sea; a formation so thick it shows neither dip nor strike. It gradually hardened. The outer crust of all such formations in the Pacific is hard, especially where air has penetrated the pores and solidified the mass. It has an apparent specific gravity of 2.60.

When it is loaded into a truck and dumped on a roadway, it will not slake under action of rain and air. It will pulverize readily, however, under a sheepsfoot roller ballasted moderately with water up to approximately 1650 pounds per linear foot of tread. Once placed and leveled, it will pack so hard that heavy truck traffic affects it not at all. Motor graders trimming a road built out of material from this coral pit show a solid streak of fire along their blades when they patrol at night.

Operations were pushed rapidly. For the first weeks the Seabees worked around the clock. Ten to 12 hours a day, seven days per week for each man was not at all uncommon, and during this time the men were setting up camp and eating canned rations in their spare time.

It seemed at first as though the Northwest shovels would be able to dig this formation as long as dipper teeth were kept sharpened. But the material had a tendency to hang together so much that a shovel would undercut the bank. More machines were on the way in, with a huge fleet of trucks, and the job was already requiring 2500 cu. yds. of borrow a day and it was expected that this quota would have to double within a week.

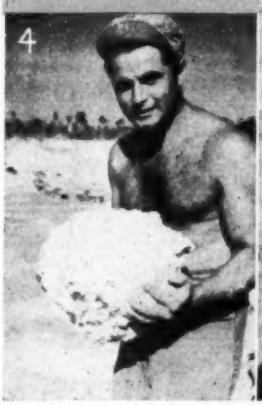
A Chicago-Pneumatic 315 cfm com-

• 1. Bucyrus-Erie Bull-grader mounted on International TD-18 tractor cleans up a bench in the pit for wagon drill operation.

2. Maintenance is the reason for good machine performance. Here the mobile service truck crew is working on the TD-18 tractor.

3. Loading and spotting arrangement of shovels and trucks.

4. Closeup of the coral rock. A chunk this size breaks up readily under a sheepsfoot roller.



• Northwest 2½-cu. yd. shovel loading against the coral face.

pressor was brought in with an Ingersoll-Rand Model FM2 wagon drill. Rose type jackbits and Ingersoll-Rand steel in six, 12 and 18 foot lengths were secured. And when the first hole went down the Seabee drillers knew they were in as treacherous and as tricky a formation as they had ever seen. Sticking a bit into this stuff was like putting it in a bear trap. You got the drill down all right, but you didn't get it back out.

The bits would go right in. The Seabees could have drilled an 18-foot hole in five minutes. The coral rock didn't dull bits or cause any loss of gauge. It just drilled loose in pieces about the size of navy beans and wouldn't blow out the top of the hole when the drill operator turned on the air.

Experience, not Seabee ingenuity, solved this problem. Heading the drilling department was C. E. Scoville of Salt Lake City, Utah, who has drilled all over the Continental Divide in the USA. He had run into similar drilling in very soft shale. He immediately took over the drilling himself and set up a sequence of operations which stopped steel from sticking except once in a very great while.

Using six-foot steel, the wagon drill was put down rapidly. About eight inches would be drilled, then air would blow the particles out. Even in this first six feet the drill was sent down slowly enough to pulverize the rock to where 100% of the drillings would pass a No. 8 sieve. But this could be done rapidly enough that the first six feet of drilling could be done in about two and one-half minutes.

Scoville then rigged up a ¾-inch pipe on an air hose and when the three-inch diameter bit was pulled up he blew out the hole thoroughly. A 12-foot length of steel was then sent down with a three-inch diameter jackbit, drilling not more than six inches at a time and pulverizing the formation consistently more as the steel fed down. Before the final six-foot length of steel was put on, making an 18-foot hole, the second phase was blown out with the air hose. The last six feet of drilling were done with a 2⅝-inch diameter jackbit, and the material was ground up still finer so the air stream would lift it up as high as 18 feet and remove it from the hole. The following is a practically accurate analysis of drilling tailings taken from a successfully drilled hole after the tricky problem was whipped:

Depth of Hole	100% Passing	Rate of Penetration
0 to 3 ft.	¼ inch mesh	3 ft. per min.
3 to 6 ft.	⅛ inch mesh	1.5 ft. per min.
6 to 9 ft.	No. 10 sieve	1.0 ft. per min.
9 to 12 ft.	No. 20 sieve	.8 ft. per min.
12 to 15 ft.	No. 40 sieve	.6 ft. per min.
15 to 17.5 ft.	No. 50 sieve	.5 ft. per min.

After the solution was reached, 18-foot holes were put down on 12-foot centers in from 15 to 20 minutes time. Bits neither dulled nor lost gauge in 2500 linear feet of drilling. It is estimated that a jackbit would take more than a mile of this drilling before it would have to be resharpened. The tailings coming up out of the drill holes were still damp to the touch after 30 minutes exposure to the sun.

Holes were loaded with 20 sticks of 40% Atlas gelatin to each hole and set off by instantaneous caps. This sort of shooting shook up the formation enough to increase the output of each shovel by 25%, and in increasing output it also made the digging much easier for the machines. The top of the bank no longer hung together to be gouged out by a dipper stick extended all the way out to the greenhorn block. It caved as it should, and the material was much better pulversized than it was before shooting. In four months of excavation, a million cu. yds. of coral was taken out with the help of only 3000 pounds of explosives, but the job has certainly demonstrated the wisdom of well-placed blasts.

Equipment on Job

As soon as possible the pit was set up on a twin level excavation setup. While the first lift was being removed, other machines were hard at work on a second lift. After four months, 12 acres had been dug to a depth of 35 feet. Within three weeks from the time the job started, the Seabees had moved in the following list of equipment and were stepping up production to 5000 cu. yds. a day:

2 Universal ½-cu. yd. shovels
2 Northwest 1½-cu. yd. shovels
2 Northwest ¾-cu. yd. shovels
1 Northwest Model 80 2½-cu. yd. shovel
1 International TD-18 tractor with Bucyrus-Erie Bullgrader
1 Caterpillar D-8 with LeTourneau blade
75 GMC and International 3-yd. dump trucks
6 Euclid Wagons (12-cu. yd. capacity)
5 LeTourneau 9-cu. yd. Tournatrailers
1 Chicago Pneumatic 315 cfm compressor
1 Ingersoll-Rand FM2 wagon drill
2 Ingersoll-Rand JB5 Jackhamers
2 Kohler 4 kw light plants

The shovels were scattered out and faced into the bank and trucks rotated in a single spotting system

• In an effort to save tires, dual wheels have been removed from this truck coming up the ramp from the pit.

which permitted loading under a 90-degree swing angle from face to truck bed. Seabee spotters were not used. With a heavy excavating face before them, the advance of the machines was never so rapid but that the truck drivers could judge where to stop. Trucks were loaded in from one to three passes, but even when a big Euclid wagon came in the drivers never left their cabs. Hoist-crowd-swing-dump. That was the never-ending cycle. The Seabees got to a point where they saw shovel dippers in their dreams.

So important was the output of this pit that the shovels couldn't even take time to clean up the pit and keep it trimmed as to grade. Production had stepped up to 7000 cu. yds. in 24 hours. The International mounted Bucyrus-Erie Bullgrader, because it was hydraulically controlled, was selected to keep the pit floor level and keep loose material pushed back against the digging face. It leveled and trimmed ground ahead of the drillers. All leveling was done in a forward gear (generally first gear) with a very slight down pressure on the blade. Taking care of 12 acres of borrow pit, behind seven shovels, was a man sized job, but the machine handled it and found time to do some other work as well, which will be described later.

In order to keep this machinery running at full speed, a maintenance equipment section was set up. Trucks were serviced, greased and tires repaired at the Seabee garage near by. A portable service unit mounted on a GMC stake body truck was used to service heavy machines in the field. This unit, similar to that used by modern contractors on remote, heavy excavation work, consisted of an Onan air compressor with an Onan battery charger, a light plant, two 1000-watt floodlights and pressure grease tanks. Leading out from the rear on handy hose reels were air, chassis lube, gear lube (two hoses), #20 motor oil, #30 motor oil and #40 motor oil.

• Some of the coral from this huge pit found its way into road construction. Here a Bucyrus-Erie Bullgrader levels off some dumped coral. This will be dressed by a motorgrader and the road will be ready for traffic.

Shovels and tractors were serviced twice every 24 hours. Engine lubricating oil was changed every 60 hours. Each second trip the oil filters were changed and air filters cleaned. The day this job was covered, four Seabees swarmed over the International TD-18 tractor and did this work in 12 minutes: greased track rollers; greased all zerck fittings; greased clutch and main drive bearings; checked transmission and final drive; refueled the machine, and checked oil level in hydraulic reservoir.

When the service truck pulled up to a machine, work stopped. The proper lubrication of equipment was one of the most important factors in maintaining top yardage output. So integrated were these operations that the officers in charge never viewed lubrication as a stoppage of work. It was more of an insurance that the work would go on.

On an average, the material from this pit was hauled two miles one way. Some of it went farther, some less. But the entire construction program in a two-mile radius was all centered in one way or another around the successful operation of excavating machinery.

Trucks hauling to the near-by airfield repaired bomb damage and built roads. The main highway was started, and secondary roads built. The job was started in the height of an 81-inch normal rainfall season, and all the areas selected for camp sites, storage space and warehouses had to be built up from the mud. Somehow it was done.

The same battalion doing the excavation operated an asphalt plant. Some of this material was trucked to a rock crushing plant. It broke up to form a mix so naturally perfect that no sand or fines had to be added. Mixed with cement it made Class A concrete.

A number of secondary roads were built in the vicinity. As the subgrades were exposed, trucks from the pit hauled material out and dumped it in a single layer. The International TD-18 Bullgrader traveled out of the pit many an afternon to smooth up two miles of coral over a road. Many roads, five and six miles long and as good as any farm-to-market stateside road, have been built in their spare time by the Seabees. They call them their "accidental roads." Equipment working strictly spare time in order to keep it operating every hour went out to one of these projects and worked on it until it was done. One such secondary road in the vicinity will serve a Seabee battalion. It is three miles long, its drainage culverts

(Continued on page 349)

• Smoothing coral on a road with an International TD-18 tractor mounted with a Bucyrus-Erie Bullgrader.

Okinawa Airstrip

• Airstrip construction, so necessary for air support ground troops, continues while fighting goes on for bitterly contested Okinawa.

Most of the hills on Okinawa are of coral formation which provides excellent surface for roads and airstrips. The above picture is of a completed runway with a plane landing in the distance to join row of fighters lined up in background.

To the left a Bucyrus-Erie 22-B ¾-cu. yd. power shovel loads a truck with coral as empty trucks line up for another load. Below: LeTourneau bulldozer grades coral.

U. S. Signal Corps Photos

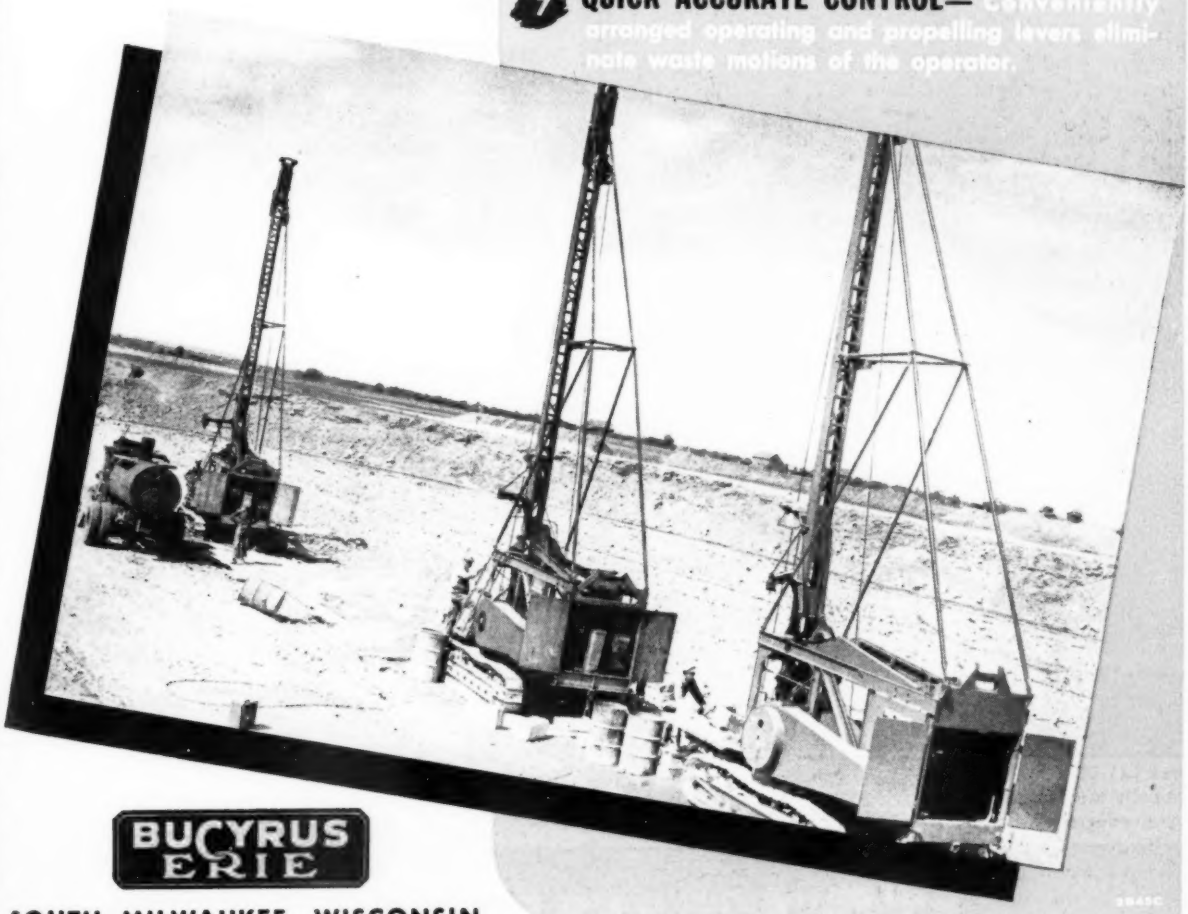
• Right: Double spotting trucks at the Bucyrus-Erie ¾-cu. yd. shovel speeds the supply of coral to the airstrip site. Below: Army trucks roll bumper to bumper along an Okinawa road carrying coral. Loaded trucks are in the lane in the foreground and empties returning to the shovel for a load are in the inside lane. Shovel booms can be seen in the background.

U. S. Signal Corps Photos

Rock Preparation Savings with Bucyrus-Erie Blast Hole Drills

These are some of the reasons why quarry operators everywhere are keeping their rock preparation costs consistently low with Bucyrus-Erie—why it will pay you to investigate these models: 22-T for 5⅝" and 6" holes; 27-T for 6" and 6⅝" holes; 29-T for 6⅝" to 9" holes; 42-T for 9" to 12" holes.

1. **FAST DRILLING**— Accurately timed, powerful drilling blows give you more footage every hour.
2. **LESS LOST TIME**— All steel construction stands long hard use, reduces lost time for maintenance and repair.
3. **LOW FUEL CONSUMPTION**— Efficient utilization of power cuts fuel costs to a minimum.
4. **RAPID MOVES**— Speedy caterpillar-type mountings reduce time for moving from one location to another.
5. **EASY STABILIZING**— Permanently attached stabilizing jacks make stability easy to achieve and maintain.
6. **SPEEDY TOOL CHANGES**— Built-in tool wrenches (available on all except the 22-T) make tool changes fast and easy.
7. **QUICK ACCURATE CONTROL**— Conveniently arranged operating and propelling levers eliminate waste motions of the operator.



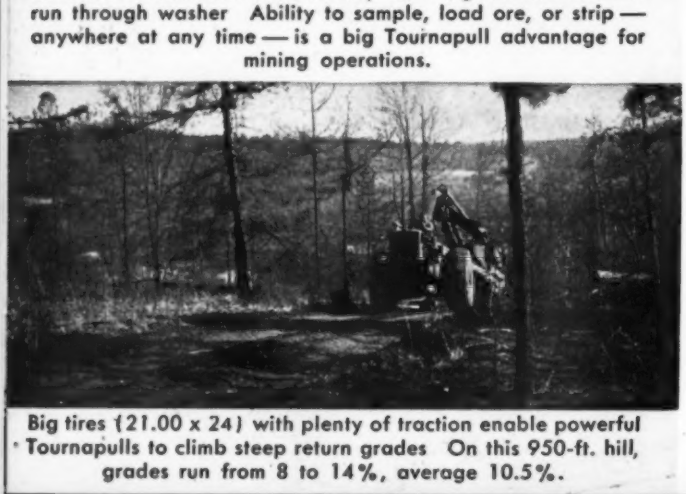
BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

GEORGIA MINE OWNER SAYS OF TOURNAPULL OPERATION...

This pit, formerly worked by shovel, was easily adapted to Tournapull operation. Snatch-loaded Tournapull gets 37,400 lb. heaping load of iron ore in approximately 1½ minutes.

Here Tournapull samples new pit. Ore in most cases is so near the surface that even the top soil — grass and all — is run through washer Ability to sample, load ore, or strip — anywhere at any time — is a big Tournapull advantage for mining operations.



Big tires (21.00 x 24) with plenty of traction enable powerful Tournapulls to climb steep return grades On this 950-ft. hill, grades run from 8 to 14%, average 10.5%.

REPLACING 1 shovel and 4 three-yard trucks, 2 fifteen-yard Super C Tournapulls owned by Arrington Mining Company of Cedartown, Georgia, are mining iron ore in the rough and rugged hills of northwestern Georgia. The ore lies in pockets of varying size — some 100 feet in depth and several hundred square feet in area. Ore fragments vary from small pea to lump coal size and are imbedded in red clay. Recovery rate is one ton of washed ore for 6 to 6½ tons of dirt and clay.

Ore Pockets Scattered — Grades to 14%

Ore pockets are spotted over the entire property — many in seemingly inaccessible places. One of the pits being worked with Tournapulls is easy to reach; the other is probably the most inaccessible of the whole field, proving Tournapull's ability to handle any pit in the area. The ore pocket on the toughest hill is a half-mile from the washer. The return haul on this 950-foot grade runs from 8% in one stretch up through 14%, with an overall grade of 10.5%.

Tournapulls Load Ore in 1½ Minutes

Even with new operators, Tournapulls are snatch-loaded in 1½ minutes, taking a 3 to 5 inch cut on each pass. Material weighs approximately 3400 pounds per yard. Loads average 10 to 11 yards bank measure — approximately 37,400 pounds.

LE TOURNEAU

PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

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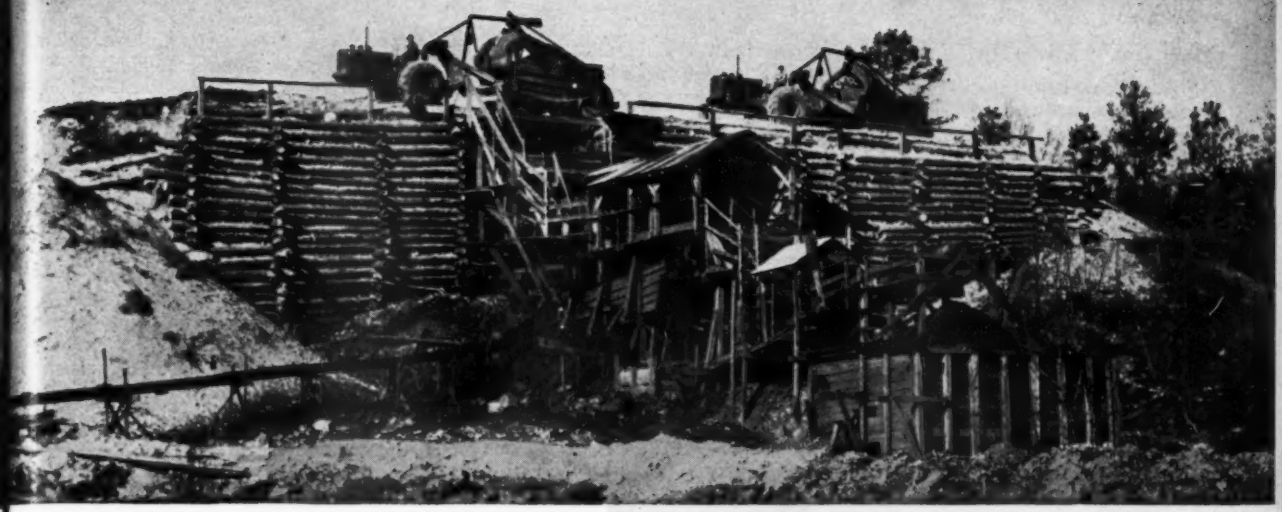


Dump Through Grizzly

Loaded, the Tournapulls haul down grade to the plant where they drive up an unloading ramp, dump through a grizzly into a chute below, then return to the cut.

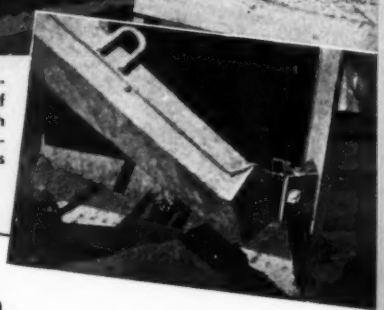
Keeping an adequate supply of material at the washer for processing at all times is the main requirement on this job. The LeTourneau rigs are doing this and more. Where 4 trucks had to "highball" to keep the washer operating at full capacity, production with the 2 Tournapulls is so great that Arrington found it necessary to double the size of his chute feeder.

Economical for Opening Test Areas

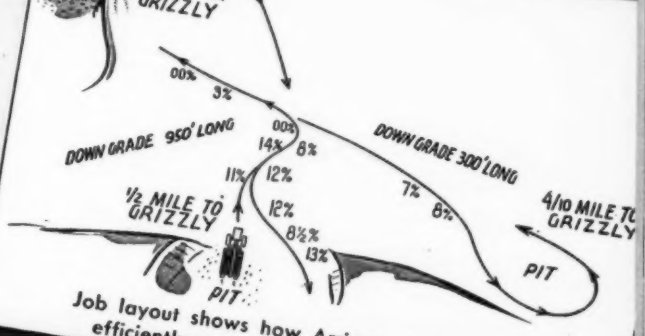
Moving the shovel over rugged terrain to open scattered test areas to determine richness of lode and its boundaries was a costly and tedious operation. Because of their mobility, Tournapulls handle this work without loss of time or extra expense. Further, stripping and ore loading can be handled intermittently with no pit delays. Whenever there is trouble at the plant the Tournapulls can switch to stripping operations immediately. Commenting on his Tournapull's ability to profitably handle every phase of this mining operation, owner, C. Arrington says: **"You have to see it to believe it."**

You, too, will find Tournapulls can cut costs on your mining jobs. Your LeTourneau distributor can show you how. See him TODAY MD

Tournapulls dump through grizzly; built their own earth-fill ramp.



Tournapulls start to dump. Runners over grizzly are 36" wide, of 6 x 12 timbers, reinforced with channel iron. Tournapull completely unloaded; blade scrapes runners clean.



Job layout shows how Arrington's Tournapulls efficiently met all production requirements.

TOURNAPULLS

Trade Mark Reg. U.S. Pat. Off.

Field NOTES

Stop Jack Failures

All work and no care is the source of most jack failures: Following are a few good rules for the proper care and use of jacks.

Apply Proper Lubrication. High in the reasons for jack failures is lack of lubrication. Jacks are subject to an unusual amount of rough handling and probably no other tool receives such high frictional wear. Apply sufficient lubrication to the correct places and keep the comparatively small jack well lubricated at all times.

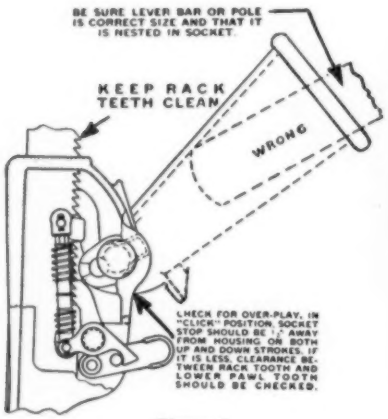

BE SURE LEVER BAR OR POLE IS CORRECT SIZE AND THAT IT IS NESTED IN SOCKET.
KEEP RACK TEETH CLEAN.
WRONG
CHECK FOR OVER-PLAY. IN "CLICK" POSITION, SOCKET STOP SHOULD BE 1/8" AWAY FROM HOUSING, ON BOTH UP AND DOWN STROKES. IF IT IS LESS, CLEARANCE BETWEEN RACK TOOTH AND LOWER PAWL TOOTH SHOULD BE CHECKED.

Figure 1

Guard Against Overloading. Jacks are tested for a 50% overload, but that doesn't mean a 50-ton jack should be used to lift 75 tons. Where several jacks are used under one load, keep each within its rated capacity. This overloading caution applies to all types of jacks, whether screw, hydraulic, or automatic.

GREASE BEARING UNDER CAP REGULARLY.
USE PROPER SIZE LEVER BAR—BE SURE IT IS INSERTED COMPLETELY THROUGH HOLE.
USE MACHINE OIL ON SCREW—NOT GREASE.
DO NOT EXTEND SCREW BEYOND SAFE LIMIT.

Figure 2

Avoid Fouling Jacks With Dirt. Sometimes this is unavoidable, particularly with trip or track jacks (Fig. 1) where there is greater chance for the entrance of foreign matter in the rack teeth. Grit and dirt in screw jacks (Fig. 2) cause abrasion and wear the threads so that play develops. One contractor using screw jacks made skirts of washed cement bags to keep out dirt (Fig. 3). With hydraulic jacks, keep both the ram and its telescopic extension screw clean.

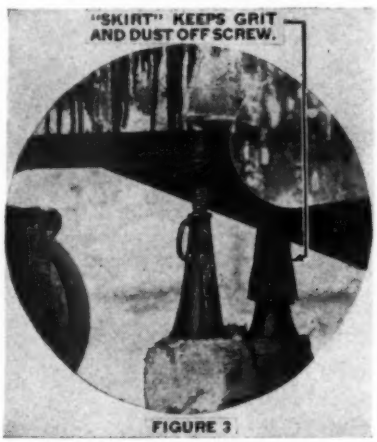


FIGURE 3

Center Jack Under Load. A jack's capacity is based on the load being placed squarely on the cap. Fig. 4B shows hazardous wrong loading. Avoid blocking a load not parallel to the floor or ground and don't have the load contact only part of the cap. Shim the jack (Fig. 4D) so that the cap and load have firm contact. Have good seasoned timber blocking under the jack to increase the area on which the load rests, to protect floors from splintering, or to protect the jack against being pushed into the dirt.

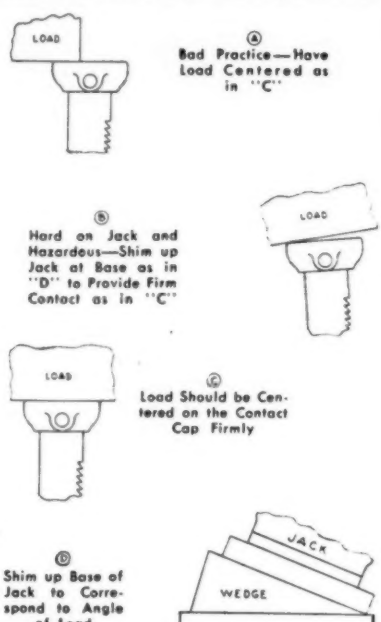

LOAD
Ⓐ Bad Practice—Have Load Centered as in "C"
Ⓑ Hard on Jack and Hazardous—Shim up Jack at Base as in "D" to Provide Firm Contact as in "C"
LOAD
LOAD
Ⓒ Load Should be Centered on the Contact Cap Firmly
Ⓓ Shim up Base of Jack to Correspond to Angle of Load
JACK
WEDGE

Figure 4

Screw Jacks. Lubricate the screw with machine oil (Fig. 2) and the bearing under the cap with grease. Hold screw within safe limits—roughly not more than two-thirds of the screw should be run out.

Hydraulic Jacks. Keep correct oil level (Fig. 5) for maximum lift. A clean ram will not carry dirt down into the cylinder. Important caution: Do not use a longer lever bar than the one supplied for it lifts a load heavier than the jack's capacity.

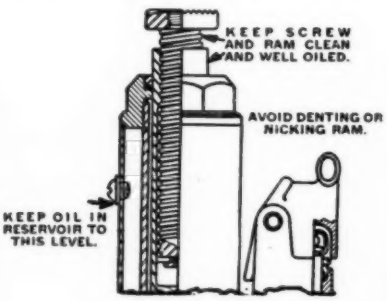


Figure 5

Automatic Lowering Jacks. Check overplay (Fig. 1). Occasionally wash spring link in kerosene. Very important, too, is the use of the correct size lever bar or pole for wrong sizes quickly damage sockets and are dangerous to use.

Track or Trip Jacks. Check rack tooth and pawl tooth clearance. If an .083 feeler will not enter, the jack is not safe to use. Keep lifting pawl seat clean. Blow out dirt, or wash with kerosene.

Journal Jacks. Do not extend ram beyond indicator rings (Fig. 6). Op-

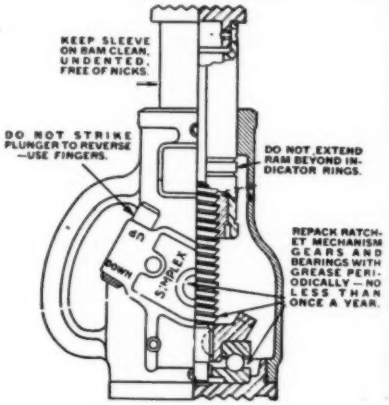
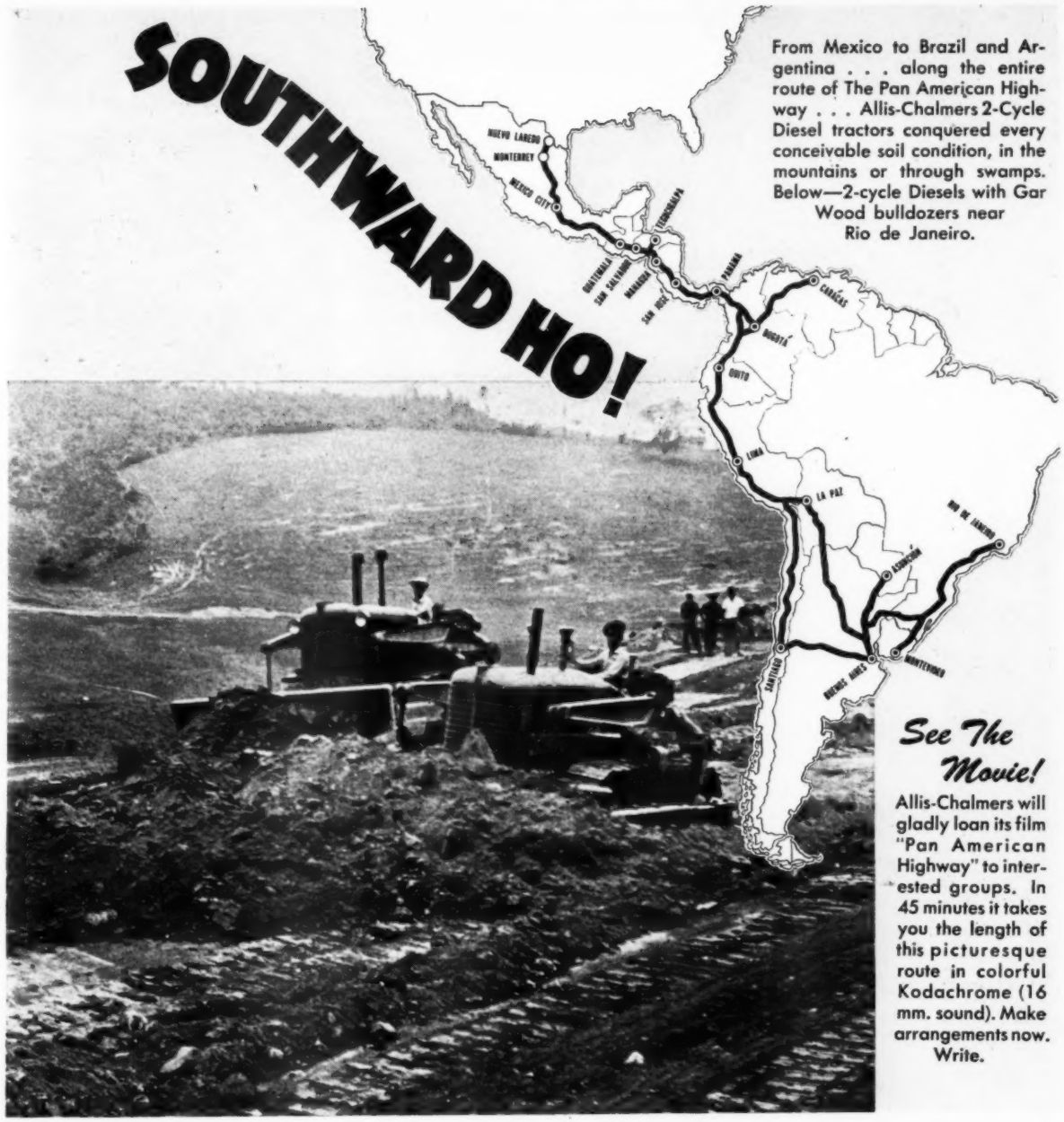

KEEP SLEEVE ON RAM CLEAN, UNDENTED, FREE OF NICKS.
DO NOT STRIKE PLUNGER TO REVERSE —USE FINGERS.
DO NOT EXTEND RAM BEYOND INDICATOR RINGS.
UP
DOWN
SWIVEL
REPACK RATCHET MECHANISM GEARS AND BEARINGS WITH GREASE PERIODICALLY—NO LESS THAN ONCE A YEAR.

Figure 6

SOUTHWARD HO!



From Mexico to Brazil and Argentina . . . along the entire route of The Pan American Highway . . . Allis-Chalmers 2-Cycle Diesel tractors conquered every conceivable soil condition, in the mountains or through swamps. Below—2-cycle Diesels with Gar Wood bulldozers near Rio de Janeiro.

See The Movie!

Allis-Chalmers will gladly loan its film "Pan American Highway" to interested groups. In 45 minutes it takes you the length of this picturesque route in colorful Kodachrome (16 mm. sound). Make arrangements now. Write.

Soon it will be Southward Ho . . . into the lands of ancient men . . . to the "last frontiers of the Western Hemisphere." The Pan American Highway System will open the way to new, unexplored, unknown riches . . . commercial trade . . . exchange of tourists, culture and knowledge.

A dream in 1924 . . . it is expected to be opened for all weather travel late in 1947. Only gaps remain to be completed. Beginning at Nuevo Laredo, Mexico, it links the capitals of 17 Latin American countries — as far south as Buenos Aires, Argentina, thence north to Rio de Janeiro, Brazil.

Constructing this link to American solidarity is one of the toughest jobs ever undertaken. Carved through treacherous mountains, jungles and swamps it is an outstanding achievement . . . a worthy monument to its planners and builders, and to the efficiency of modern road building machinery. A great number of Allis-Chalmers tractors and graders are playing an important part in the building of this lifeline.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

erate the reversing plunger with the fingers, not with a tool. If jack is continually used, remove its base, wash mechanism with kerosene and repack ratchet mechanism and gear with grease three times yearly.

Tree Transplanting With Bulldozer

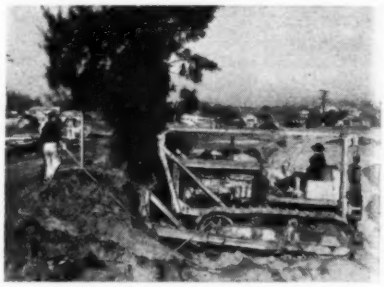
Removing and transplanting trees always has posed a problem, but engineers of Morrison-Knudsen Company, Inc., solved the problem very ingeniously on a project at Rio Vista, California.

An improvised tool attached to a bulldozer moved more than 50 large evergreen trees 20 to 35 feet in height. Art Gray, project engineer, and Ira Bradshaw, master mechanic, formulated the idea and translated it into action on the job.

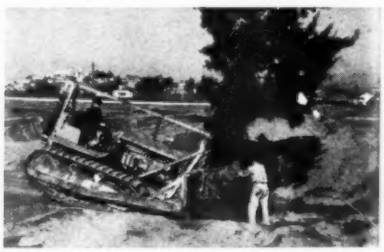
A steel box open at the front and top was welded to the bulldozer. The front edges of the box were sharpened to an edge that could cut tree roots. After a trench was 'dozed out along one side of a row of the trees, the M-K tree mover was rammed into the base of the tree, shearing the roots.

With the roots cut free, the dozer was raised, lifting the tree free. At the new location of the trees, the dozer blade with the box and tree was lowered and the tree slipped from the box. Soil then was washed in and around the roots. As many as a dozen trees a day were moved in this manner.

From The Em Kayan



• Ramming into the base of the tree from the side of the cut, the powerful cat forces the sharp edges of the box to slice through the root ends.



• Held with a rope, the evergreen is positioned at its new location before it is slid from the box.

• The improvised tree transplanter mounted on the blade of the dozer.

IDEAS THAT PAY

You, like others, devised "kinks" or ideas that cut costs, increased production, saved manpower, or made jobs easier. Why not share them with others and also benefit from their ideas? Let's have 'em! Just the facts will do and, if possible a rough sketch or photo. We'll be glad to send you a minimum of $5.00 for each item we publish—and, of course, give you full credit.

Send your idea to:

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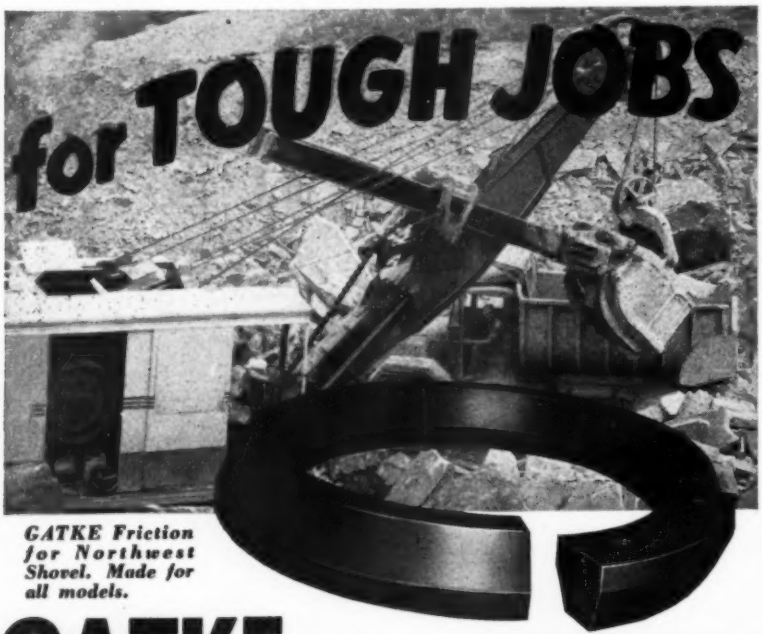

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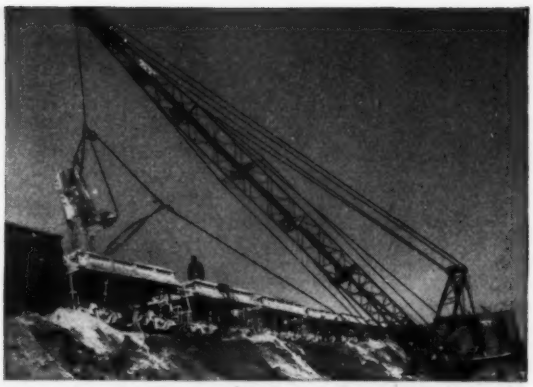

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TIGER BRAND *Wire Rope*

Shots from the FIRING LINE

Schedule Calls for 2,000,000 Cu. Yds. of Embankment at Anderson Ranch Dam

Earth-placing operations are being resumed this week on the Anderson Ranch Dam to bring the elevation of the structure to a height sufficient to store water next spring for increased war food production in the Boise valley, R. J. Newell, Acting Regional Director for the U. S. Bureau of Reclamation, announced.

The 1945 work schedule, he said, calls for 2,000,000 cu. yds. of embankment to be placed during the 200 working days between now and the fall and winter rainy season, which each year halts earth placement. Last year, 1,600,000 cu. yds. were deposited. The placement of the new material in strategic portions of the dam, at the average rate of 10,000 cu. yds. a day, will permit the Bureau of Reclamation to store 45,000 of the ultimate 500,000 acre-feet of water to be held in the reservoir. The storage will supplement the supply of the 400,000-acre Boise Project, on which crop production is being restricted because of late season water shortages.

Mr. Newell reported that the structure, which when completed will be the highest earth-fill dam in the world, now contains 3,600,000 cu. yds. of clay, sand, gravel, and rock, or about 42 per cent of the ultimate total of 8,654,588 cu. yds. The present elevation of the embankment at the highest point is approximately 250 feet above lowest bedrock. The dam ultimately will be 456 feet high. It will be 1400 feet long at the crest, 2350 feet wide at the bottom, and will create a reservoir 13¼ miles long in the canyon of the South Fork of the Boise River, northeast of Mountain Home, Idaho.

Excavation for the spillway, to be located on the left abutment, is 88 per cent completed. The open-channel, concrete-lined chute will have a maximum discharge capacity of 20,000 cu. ft. of water per second, and will be 339 feet high, almost twice the height of Niagara Falls or equivalent to that of a 33-story building.

The outlet works, which will control the elevation of the reservoir and direct water into a proposed 27,000-kilowatt powerplant, is 69 per cent completed. The intake structure is under construction, and will be placed in use as soon as storage is started. The South Fork is now diverted around the dam site through a portion of the outlet works.

Relocation of roads in the reservoir is 58 per cent completed. Clearing of the reservoir area is also being carried forward, with 39 per cent of the work completed. The river and creek bottoms have been burned over, and timber, some of it merchantable, is being cut where the slopes are not too steep. More than 1500 acres of the 4000 acres in the reservoir have been cleared to date.

The work on the spillway, inlet works, and in the reservoir was continued throughout the winter. A small amount of pervious material has been placed in the last few weeks, but until this week wet weather has prohibited resumption of full scale operations on the impervious center section.

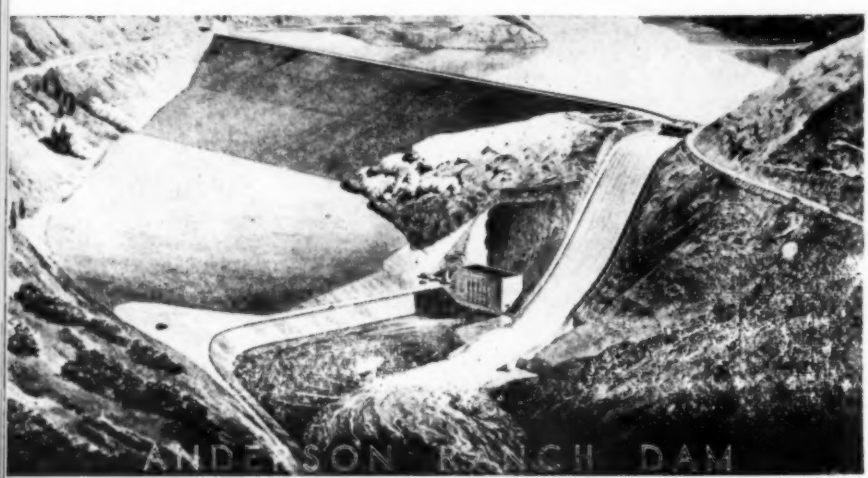
At present nearly 500 men are employed on the project. Within a few days, Construction Engineer H. F. Bahmeier, who has charge of the project for the Bureau of Reclamation, plans to institute a work program calling for two nine-hour shifts. The remaining six hours of the day, from midnight until 6 a.m., will be used for the repair and maintenance of equipment. Labor and equipment shortages have hampered the progress of construction considerably in the past, and the outlook for the coming season is only slightly better than last year.

Material for the center and impervious section of the dam is being transported from a high borrow pit 1¾ miles on a 36-inch, eight-ply rubber, electrically-powered conveyor belt. Its capacity is about 900 cubic yards an hour. After the material has been dumped at the dam, shovels load it into trucks which transport it to the placing zones. There it is compacted by 20-ton sheepsfoot rollers under a pressure of 450 pounds per square inch. After 12 rollings, the earth is packed so tightly that a cubic yard of it weighs almost as much as a cubic yard of concrete. Gravel, sand, and rock for the embankment comes from another pit and is transported to the dam in trucks, some of which carry 15 cu. yds. per load.

Construction of the dam was begun in September 1941. Major work was stopped in 1942 by the War Production Board to divert critical material to other war uses, and was resumed with WPB approval in the fall of 1943 under the War Food Program. The structure is scheduled to be completed in the winter of 1947-48.

Although the furnishing of supplemental water for the Boise Project is its immediate objective, the dam ultimately will be able to provide irrigation water for a large tract of arid land between Boise and Mountain Home, through an exchange of storage from the Payette to the Boise Basin. It constitutes an important link of the Bureau of Reclamation's comprehensive plans for development of Southwestern Idaho.

Construction is being carried on jointly by the Morrison-Knudsen Company, Inc.; J. F. Shea Company, Inc.; Ford J. Twaits Company; and Winston Brothers Company.



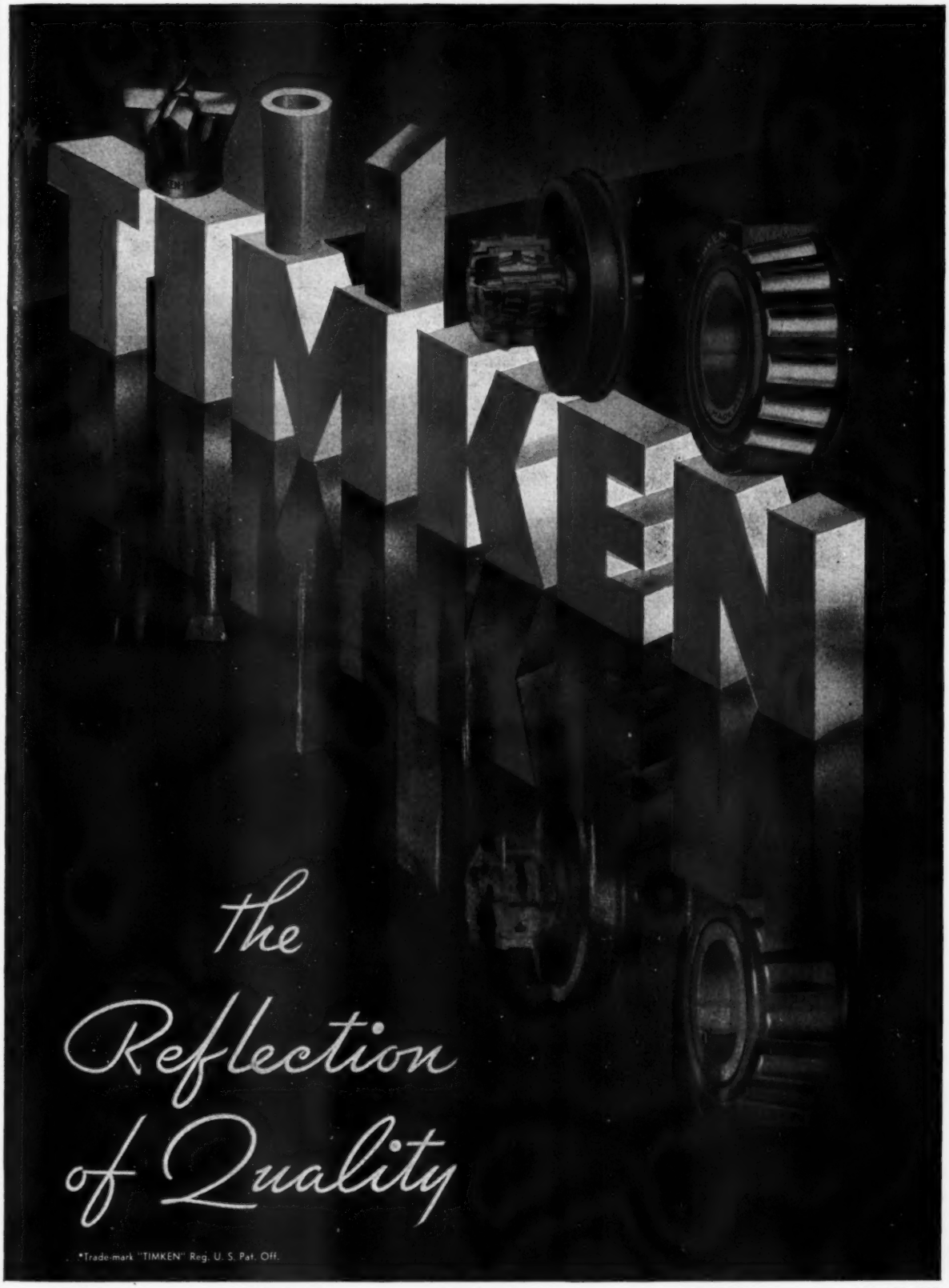
• Artist's conception of the completed appearance of Anderson Ranch Dam with tons of water cascading over its "skyscraper" spillway.

MVA Bill Attacked in Senate Hearings

Charges of encroachment upon private enterprise, stifling of private initiative, usurping of Congressional power and establishment of monarchistic tendencies have been hurled at the Murray Missouri Valley Authority Bill during hearings before the Senate Commerce Subcommittee.

Opponents of the bill who have testified include Major General Eugene Reybold, Chief of Engineers of the U. S. Army; John B. Gage, Mayor of Kansas City, Missouri; Congressman W. M. Whittington of Mississippi, who also is chairman of the Flood Control Committee of the House of Representatives; Congressman A. J. May of Kentucky, chairman of the Military Affairs Committee of the House of Representatives; C. Y. Thompson of Lincoln, Nebraska, president of the Nebraska Farm Bureau Federation, and A. D. Strong of Minneapolis, secretary of the Upper Mississippi Waterway Association.

General Reybold, in pointing out



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some of the effects which he thinks would result from passage of the Murray Missouri Valley Authority Bill, said the bill "would eliminate the present effective coordination of navigation improvements and flood control works in the Missouri Valley region, with similar improvements and works throughout the Nation.

"It would eliminate, insofar as the Missouri Valley region is concerned, that complete control and direction which Congress exercises under existing law over the planning, programming, authorizing and financing of navigation improvements and flood control works.

"It would remove from the supervision of the Corps of Engineers a large amount of the type of work it has been carrying on under the direction of the Secretary of War for 120 years."

General Reybold also said that fighting of flood waters, and particularly those of great magnitude such as occur on the Mississippi River and its tributaries, is like fighting a strong and mysterious enemy.

"The organization and the direction of this undertaking calls for a centralized military command answerable only to the Secretary of War . . . as on the field of battle, there can be no mincing of words in a flood fight, and there can be no divided responsibility," General Reybold said.

Mayor Gage expressed his concurrence in the previous testimony of Congressman Whittington and his criticism of the proposal by Secretary of Interior Ickes to place the Missouri, Columbia, Savannah, Tennessee and all other similar authorities under the supervision and direction of the Secretary of Interior.

He charged that Congress, now having the power to legislate for the general welfare without regard to the specific powers given it by the Constitution, is asked by the Murray bill to delegate that power broadly and securely as far as the Missouri Valley is concerned, comprising one-sixth of the Nation, to the proposed Federal corporation which would be set up under the Missouri Valley Authority bill.

• Two Bucyrus-Erie 1¾-cu. yd. shovels ready to start clearing up the rock brought down from the hillside by a blast in the construction of the Maraca Road in Trinidad, B. W. I. The Seabees are building this road which is at an elevation of 1200 feet.
Official U. S. Navy Photo

In Congressman Whittington's testimony he said he believed the wisest thing to do was to again reject "the unsound dream of those who advocate a superbureaucracy by the establishment, in the first place, of Authorities in the nine regions of the country and, in the second place, by the establishment of a superauthority which would transfer to the Authorities in the superauthority the functions of established agencies of the Government, which would constitute a relinquishment by the Congress of the United States as the representative of the people to approve and provide for the construction of public works."

Speaking further in opposition to scrapping the record of the Corps of Engineers, the Congressman said, "after the policy that has thus been in force for about nine years of flood control, without any person having found fault with any flood control improvement, or its construction, or, for that matter, without having found fault with any of the work of the Bureau of Reclamation in this area, Congress, in order to do something now, is asked to scrap the program and the policy and establish an authority."

Attacking the proposal of Secretary Ickes that such authorities be placed under the Department of Interior, Congressman Whittington said, "The Interior Department is a great department of the Government, but its reclamation of public works are confined to substantially one-fourth of the states of the Union. I do not know of any work that the Secretary of Interior

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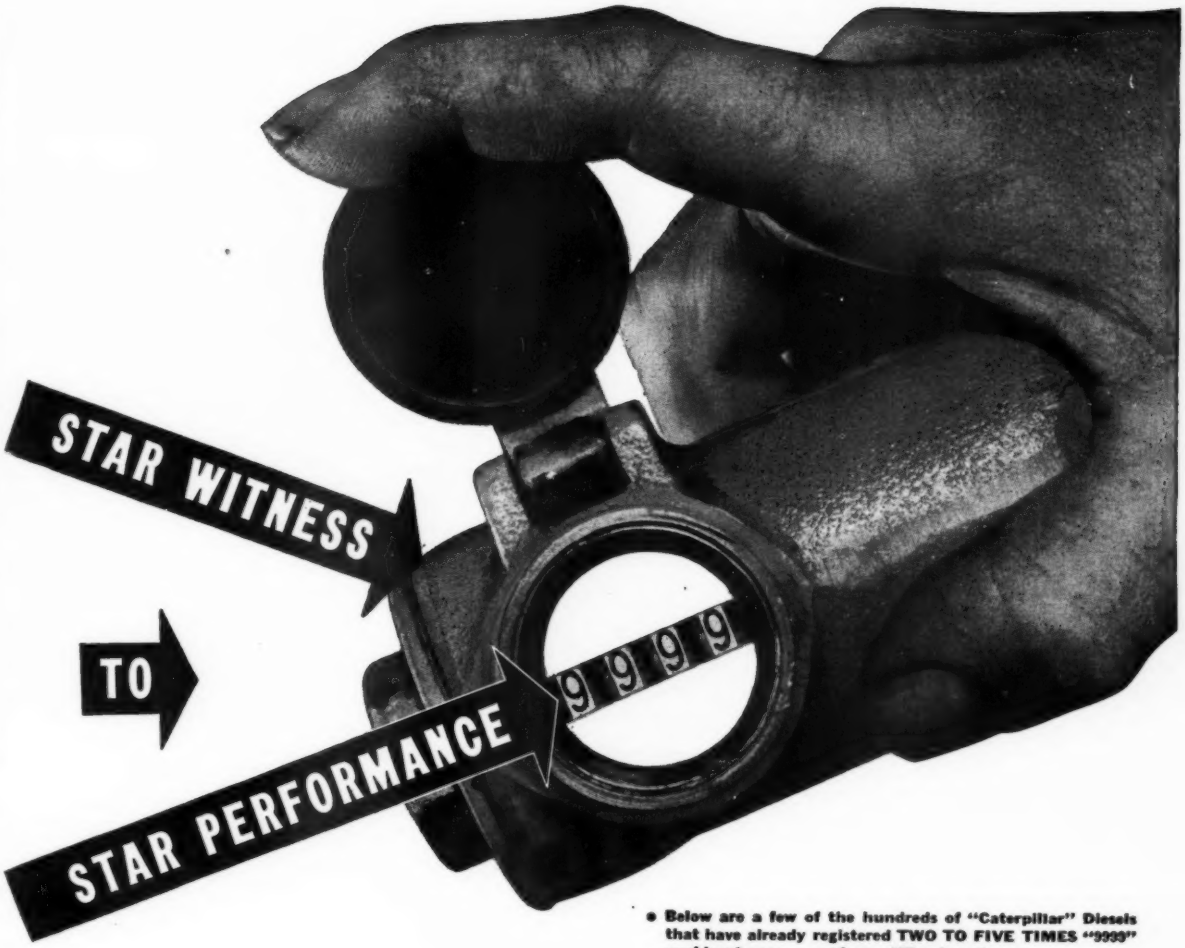

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Heber W. Glenn	Farming	54,000
H. M. Thompson & Co.	Oil Field	52,520
Barogar Bros.	Farming	45,000
E. C. Von Glahn	Farming	38,000
Frank Colt	Farming	36,000
R. M. Jensen	Contracting	33,950
R. M. Jensen	Contracting	32,880
Oahu Sugar Co.	Farming	32,000
Hawaiian Pineapple Co.	Farming	31,017
D. A. Kessler Constr. Co.	Contracting	31,000
Gilbert Courtright	Farming	30,000
W. D. Annis	Contracting	30,000
ENGINES		
A. J. Krecker & Co.	Industrial	65,000
Denwood Oil Co	Industrial	60,000
Rosenthal & Carter	Oil Field	46,525
Mt. Emily Lumber Co.	Logging	43,000
Fairview Lt. & Power Co.	Industrial	35,000
Capparell Stripping & Construction Co.	Mining	33,600
Bolton Hatchery	Industrial	32,272
S. A. Murphy	Oil Field	30,240
M. DeRomo	Contracting	28,000
W. E. Johnson	Industrial	26,616
Bridgeport Oil Co.	Oil Field	26,320
M. O. Weaver, Inc.	Contracting	25,600
Massaponax Sand & Gravel Co.	Industrial	25,000

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• **TD-14 with Bullgrader clearing a jungle area in Espiritu Santo, New Hebrides, to enlarge the Santo truck farm.**

U. S. Signal Corps Photo

does back in the Savannah River Valley, the Ohio, the Connecticut. Two-thirds of the states of the Union are outside of the jurisdiction of the Interior Department. I do not think that any one department is indispensable to government. By having demolished the board idea, after that the Secretary of the Interior would place all of these authorities, the Missouri, Columbia, Savannah and all the rest of them under the supervision and direction of the Secretary of Interior.

A. D. Strong, Secretary of the Upper Mississippi Waterway Association, read into the record a prepared statement in which he said, "In our opinion, delegation of powers over water resources to an over-all authority is not necessary and will be detrimental to the development of the Upper Mississippi and Missouri Basins, if their powers are to be exercised to the exclusion of existing state and federal engineers and experts.

John B. Quinn, executive director of the Missouri Valley Development Association, presented resolutions from seven state legislatures memorializing Congress to oppose the proposed authority and these resolutions were made up of the subcommittee's records on the hearing.

Restrictions on Dealers of Track-laying Tractors

Track-laying-tractor dealers who fill authorized orders for tractors from stock may not use purchasers' authorizations to buy stock replacements from producers, the War Production Board said. Dealers are required to fill authorized purchase orders from stock if they have the tractors on hand. However, if a dealer does not have the tractor in stock he may order it from the producer, using the purchasers' authorization or a certification of the authorization.

The restriction is imposed by Order L-53, as amended April 19. The amendment also provides that, if a customer cancels a purchase order for a track-laying tractor, the dealer must notify the producer immediately, if the order has already been sent to the producer, and no shipment may be made to the dealer on that purchase order.

Except for the tightened control over delivery of tractors to dealers, Order L-53 remains substantially unchanged. It permits the sale and delivery of new track-laying tractors only upon specific WPB authorization (Form WPB-1319).

Exemption of military agencies from this restriction is specifically stated in the amended order, for clarification. Military orders are handled through direct allocation of producers' shipments, and no change in that procedure will result from the amendment, WPB said.

Savage Retires from Bureau of Reclamation Duties

John Lucian Savage, world-famed designer of Boulder and Grand Coulee Dams, has retired as chief designing engineer for the Bureau of Reclamation, it was announced by Secretary of the Interior Harold L. Ickes. Member of the staff for 34 years, Savage has drawn plans for the construction of more than a billion dollars worth of dams, including the mightiest ever built.

He has been chief designing engineer for the Bureau of Reclamation since 1924, having first joined the staff in 1903 after the agency, then known as the Reclamation Service, had been in existence less than a year. In that time the Bureau has built scores of dams to harness the waters of Western rivers for irrigation, power development, flood control, and navigation, and the man who designed these projects has won international renown in the engineering field. Secretary Ickes said Savage will continue to serve the Bureau part time in the capacity of consulting engineer.

He has recently returned from a

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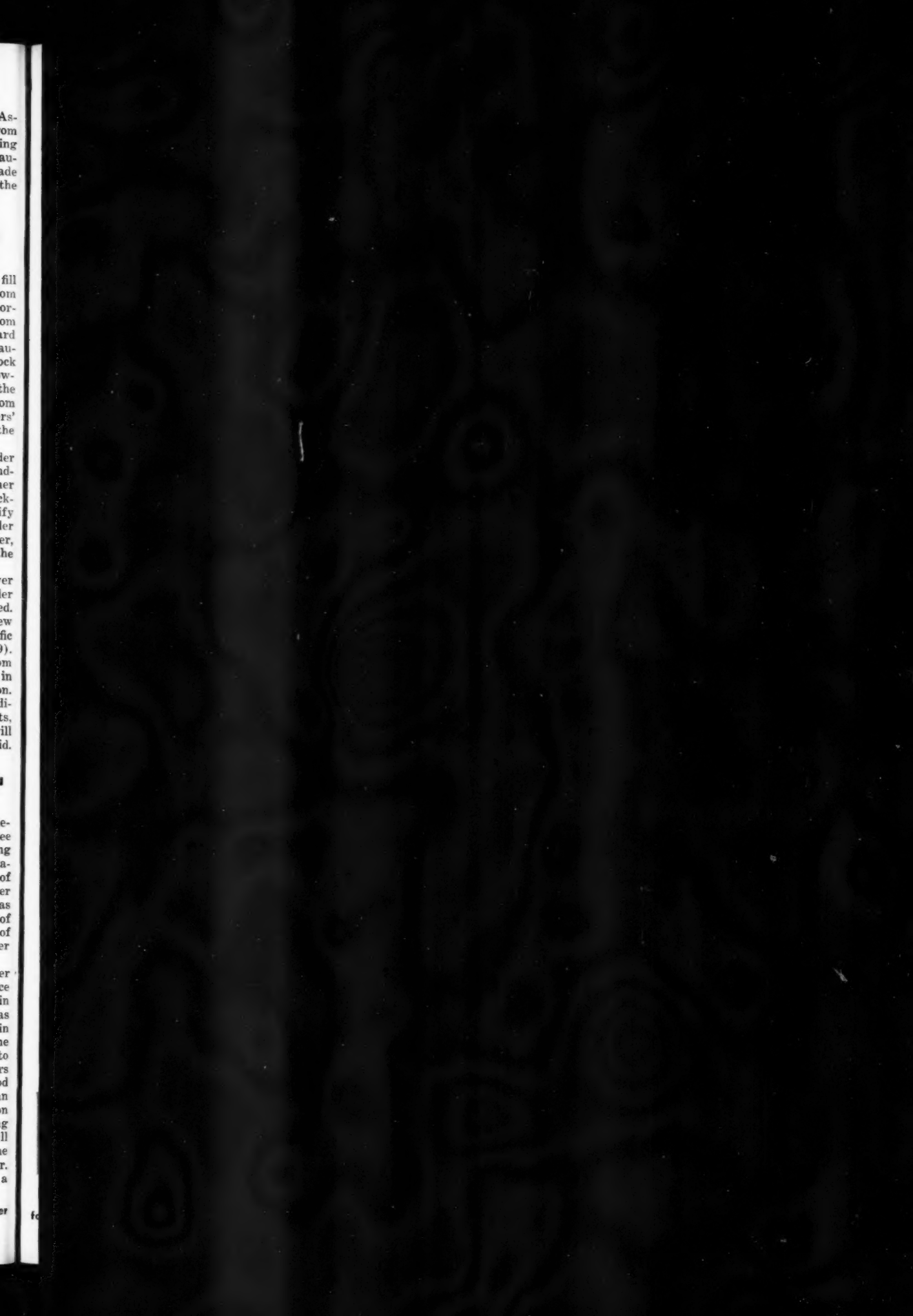

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When the tremendous after-Victory program of road building and construction breaks, all present indications point to these conditions: 1. An abrupt change back to the prewar trends of competitive contracting. 2. Ever lower costs will become increasingly important. 3. The profitable business will go to the contractors who use the most efficient methods and machinery.

You can meet these conditions with Gar Wood Road Machinery and Allis-Chalmers Diesel Power. Here is an unbeatable combination that has what it takes to shove through the toughest jobs, fast—machinery that is dependable, economical, *proved*. Plan now to standardize on the complete line of Gar Wood Road Machinery. Get the facts from your Allis-Chalmers dealer.

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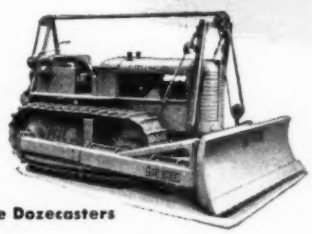
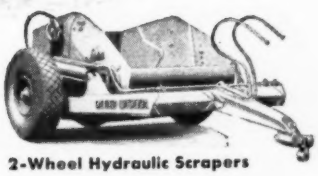
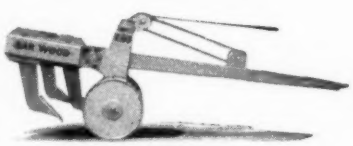


Cable Dozecasters

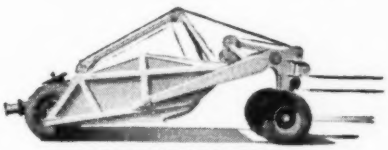
4-Wheel Hydraulic Scrapers



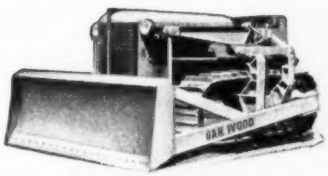
2-Wheel Hydraulic Scrapers



Heavy Duty Rippers



4-Wheel Cable Scrapers



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• German diesel shovel salvaged by American Army Engineers is put to constructive use cleaning debris in a captured Germany city. Bucyrus-Erie ½-cu. yd. shovel loads a truck in the background.
U. S. Signal Corps Photo

special mission to China and India where he represented the State Department in its cultural relations program. He made preliminary surveys and studies for several huge reclamation projects under consideration for postwar development, including one in the Yangtze Gorge.

Commenting on Savage's decision to retire at 65, Commissioner of Reclamation Harry W. Bashore said:

"Jack Savage in a very real sense has epitomized the Bureau of Reclamation. He grew up with the organization. His extraordinary gift is the ability to bring a fresh mind to new problems in engineering. His approach is daring, but his plans are sound. Neither the necessity of building the highest dam in the world in Boulder Canyon nor the requirement for the construction of the most massive concrete dam so far conceived at Grand Coulee on the Columbia River dismayed Jack Savage. He simply proceeded to design the dams, and they now are the pride of the engineering world."

Mr. Savage was the designing engineer on the three largest concrete dams in the world — Grand Coulee, Shasta, and Boulder. Other famous dams that he has designed include the Norris Dam in the Tennessee Valley, and the Wheeler, another of the key structures in the basin-wide development of that area; Friant Dam, important co-worker of Shasta Dam in the Central Valley Reclamation Project (California); and Madden Dam at the Panama Canal. The Marshall Ford Dam in Texas, Imperial Dam on the Arizona-California border, Parker Dam on the Colorado River, and American Falls Dam (Idaho) are among the numerous Reclamation dams he has designed.

Evidence of Postwar Construction Demand Seen by Survey

Mounting evidence of postwar construction demand is seen in statistics on postwar projects released by F. W. Dodge Corporation. Up to March 31, 90,700 specific projects contemplated for postwar execution had been reported by the corporation's field staff, the estimated total cost of the projects being $14,815,613,000. These projects were reported for the territory east of the Rocky Mountains, and consequently do not fully measure the potential volume.

Of more immediate significance is the fact that 30,217 of these projects, amounting to $7,231,295,000, have progressed to the design stage, representing more nearly the volume of work likely to be ready for bids within a reasonable time after wartime restrictions are lifted. This volume of postwar planned work is measurably greater than the total volume of contracted work in the 37 eastern states for any previous peacetime year.

Commenting on these figures, Thomas S. Holden, president of the F. W. Dodge Corporation, said: "Any delays in postwar construction revival will definitely be due to temporary material

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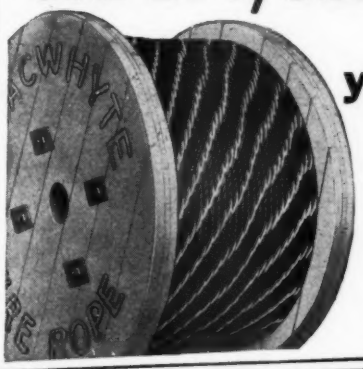

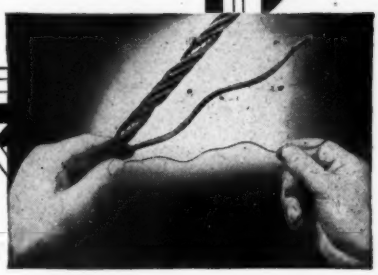

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Today a large percentage of Macwhyte PREformed Wire Rope is serving on the battlefields, in the air, on the sea and in essential industry. For this reason there is not enough to fill all requirements.

But don't stop asking for Macwhyte PREformed! Quite often it *is* available, and *when* it is, you get a rope with less internal fatigue, less friction, better balance and longer life. You get a safer, easier-to-use rope, because strands are PREformed to lie naturally in place.

The wire that goes into Macwhyte PREformed is processed under constant metallurgical control to make it tougher, more flexible. And when this wire is assembled into strands, PREformed and internally lubricated under close supervision of wire rope craftsmen, it just *has* to be the correct rope for your equipment.

We hope, as many of our friends do, that it will not be too long before we can say, "You can have all you need." In the meantime keep asking . . . not for just "wire rope," but for "Macwhyte PREformed Wire Rope." When it is available you'll have the finest!

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and manpower shortages rather than to any lack of demand or to dearth of planned projects. Our recorded figures include no deferred repair, maintenance and modernization projects, demand for which will be very heavy. They include only moderate amounts of such small new private building projects as are not usually planned much in advance of actual work. While our tabulation is definitely overweighted with public projects which may take some time for adequate financing, the $2,237,518,000 of new private projects in the design stage is considerably greater than the actual volume of private work in the 37 states contracted for in any of the prewar years, 1937, 1938 or 1939."

Plan Construction of Largest Earth Dam in New Zealand

An earthfill dam to be constructed for the City Council of Maungaroto, North Auckland, New Zealand across the Lower Nihotupu Valley at a cost of $1,151,376 will probably be the largest earth dam in New Zealand. The dam will be constructed to augment the city's water supply.

Soil mechanics will play an important part in the construction of the dam, according to H. H. Thompson, resident engineer. Various layers of soil that have been carefully selected, mixed and tested will be placed on a foundation cleared to hard limestone rock and then graded and rolled until a desired compactness is obtained. The impervious core, roughly triangular in section with a flat top, will be built practically to the full height of the dam. To prevent seepage underneath the dam a concrete cut-off wall will be built at the base of the core and for its whole length.

Any seepage that does occur will be controlled by a specially-constructed filter toe of selected shingle at the foot of the lower side of the dam. A covering of thin concrete slabs will be placed on the upstream face to prevent wave action while the lower face will be turfed and channelled horizontally to carry away rain water.

Most of the soils needed for the dam will be obtained from pits in the lake area. Excavation and removal will be done by modern machinery, a great quantity of which will be employed. The testing of the soils will be carried out before removal to the dam site at a special field testing station.

The spillway works will be a feature of the project. They will be constructed at one end of the dam, and have been designed with a wide safety margin. Flood waters will flow over weirs on each side of the intake and will escape through a concrete-lined spillway channel. The top of the weirs will be about seven feet below the crest of the dam.

When the dam is completed it will impound 1,200,000,000 gallons of water. The structure itself will contain approximately 460,000 cubic yards of material. The crest length will be 1176 ft., with a top width of 15 ft., and a maximum base width of 426 ft. The maximum height of the dam will be 80 ft.

Ohio Coal Output Increase

A report of the Ohio Department of Industrial Relations indicates that a total of 31,416,000 tons of coal was mined in Ohio in 1944, compared with 31,009,023 tons in 1943, and 31,491,420 tons in 1942. Production came from 470 mines in 25 coal-producing counties.

Ask Congress Make Airport Program Appropriation

Provision at once for sufficient funds for financing preliminary investigations and plans for a national airport program was recommended by H. E. Foreman, managing director of the Associated General Contractors of America, at the hearings of the Senate Commerce Committee on Senate bills providing for an airport program on a federal-aid basis.

"At least a year and a half will be required to handle these preliminaries on a national scale," Foreman declared, "and it is apparent that states and municipalities are waiting to see what the policy of the federal government is going to be with respect to aid for airways facilities."

The question has already been settled

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V-78-C

SO. MILWAUKEE **BUCYRUS ERIE** WISCONSIN

• Bullgrader at work on a mountainous road called San Juan Trail near Camp Pendleton, Calif. The San Juan Trail is 14 miles long and connects Camp No. 2 with Casey Springs.

with respect to highways by the enactment of Federal Highway Act of Dec. 20, 1944, he continued, and there is also a plan for making loans to states and municipalities for advancing the planning of local public works.

"Action is even more necessary in regard to airways facilities," he said, "because of the magnitude of some of these projects. This is so important that if there is to be any delay in the enactment of this authorization earlier action by separate enabling legislation for plans and surveys should be taken."

The scope of the contemplated airport construction program is indicated by the annual appropriations provided in the Senate bills, S.2 by Senator McCarran of Nevada, providing $100,000,000 a year for a five-year program on a 50-50 matching basis, and S.34 by Senator Bailey of North Carolina, providing $80,000,000 a year for a ten-year program on a matching basis.

Vermont To Take Advantage Of Federal Highway Aid

"The additional highway money which the state will obtain when the 1927 flood bond and 1938 hurricane debt are paid undoubtedly will make it possible for Vermont to take full advantage of postwar federal aid and to provide considerable employment on needed highway projects," the Vermont State Highway department declared in its biennial report.

The department's report outlined needed highway improvements costing approximately $57,000,000 which could be carried out over a period of about 20 years.

Mexico Plans 1945 Highway Program

Mexico plans to spend $30,900,000 in highway construction and improvement this year, according to the Department of Commerce. Preference will be given to four major routes which have been started and are now in use over considerable distances. A number of smaller highways connecting industrial, agricultural and mining centers to the large trunk routes are included in the plans.

Consumption Requirements Exceed Coal Production

Although the nation's output of bituminous coal reached a new peak in the past 12 months, consumption requirements will exceed production by from 10 to 16 million tons in the fuel year which ends next March 31, Solid Fuels Administrator Harold L. Ickes told members of the Solid Fuels Advisory War Council at their monthly meeting in Washington.

Exact measure of the deficiency will depend on the rate of war industry production, Administrator Ickes said. This variable factor limits forecasts to the next quarter, it was pointed out.

"Trends in production and anticipated consumption requirements," Administrator Ickes said, "indicate that there will be a deficit of at least 10,000,000 tons between requirements and bituminous coal production during the January through March quarter of 1945. This will mean, for the second successive fuel year that requirements exceed production and that there will be a net loss in consumer stocks.

"The major limit on production is due to manpower shortages which have been more severe in mines producing the high grade coals. Strikes, too, are

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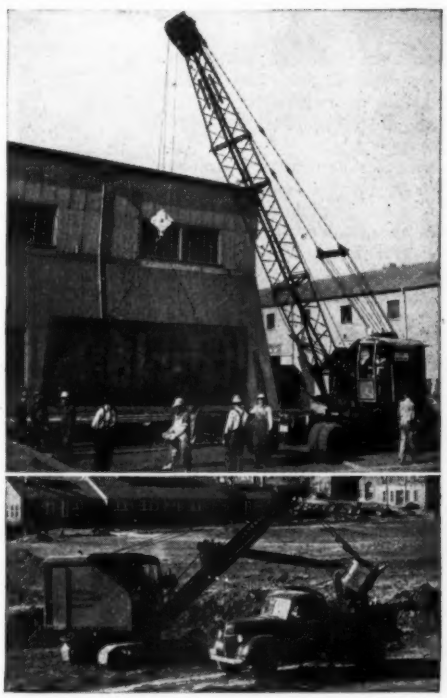

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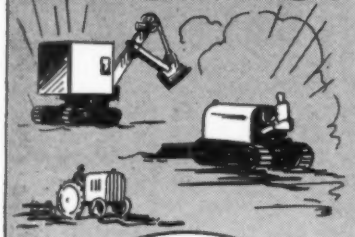

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another contributing factor. These limitations have made it impossible to increase stocks to levels necessary to provide adequate coal for all uses during the winter.

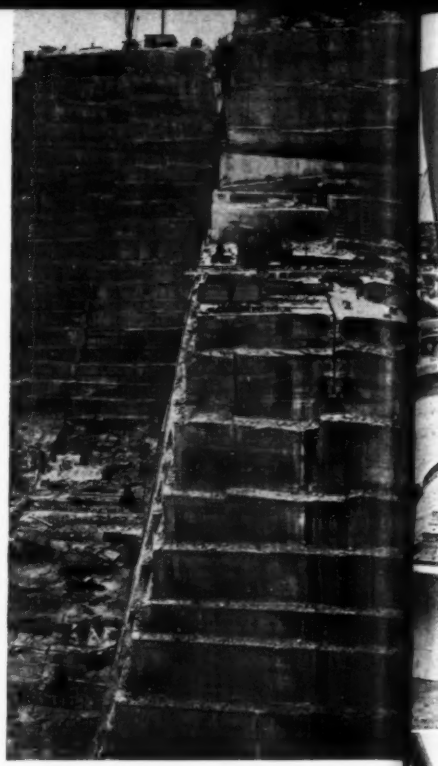
"We can expect to be in an extremely tight position by April 1. Total stocks of bituminous coal, which on November 1 were 65,000,000 tons, will then probably be reduced to less than 50,000,000 tons, or less than one month's supply. Stocks of preferred high grade coals, which are already low, will have been reduced to a point of real danger.

"Production of bituminous coal in the fuel year ending next March 31 will probably approximate 610,000,000 tons. Consumption requirements for the same period are now estimated at between 620,000,000 and 626,000,000 tons, even after deducting savings effected by conservation and by limitations on the use of the scarce Southern Appalachian domestic coals.

"As as Dec. 12, bituminous coal production in the calendar year 1944 is estimated to have totaled more than the all-time record of about 589,000,000 tons mined in the entire calendar year of 1943. Present indications point to a 1944 calendar year production of approximately 621,000,000 tons. That will just about balance consumption for the same period and stocks of coal on January 1 are likely to be about the same or slightly lower than the 57,000,000 tons above ground on January 1, 1944. Consumption of coal would have exceeded production except for the decline in general industrial activity which occurred in the late summer as the result of optimism that there would be an early victory over Germany.

"The difference between the 1944 calendar year and the 1944-45 fuel year production is the result of the extremely heavy output of 161,305,000 tons between January and March 1944. Mine manpower was then at its 1944 peak.

"Production in the second quarter of the calendar year, which is the first quarter of the current fuel year, was 5,000,000 tons under the January through March figure. In the July through September quarter, production dropped another two and one-half million tons and in the October through December quarter is expected to drop further.



• A corner of one of the five sandstone quarries at South Amherst, Ohio, largest in the world, operated by Cleveland Quarries Co. Air, which was used to cut out the solid mass of stone that once filled this canyon, is compressed at a central plant and distributed over 16 miles of lines to power the tools used for quarrying stone by the millions-of-tons.

Photo Courtesy Compressed Air Institute

"Production in the first quarter of 1945, which is the last quarter of the 1944-45 fuel year, will probably approximate 150,000,000 tons which would be 11,000,000 tons under the corresponding quarter of 1944.

"These figures should not minimize the remarkable production record achieved in the 1944 calendar year. Production will have increased about 5.2 per cent, despite a mine manpower drop of about 7.2 per cent. The President made me responsible for negotiating a wage scale to bring peace to the industry and increase production. That agree-

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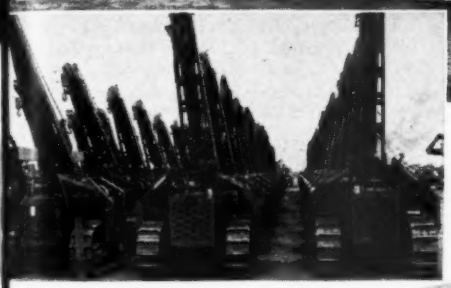

Left: Rows of International TracTracTors with cranes, and left, below: International Diesels with dozer shovels, all massed for shipment to the fighting zones.

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There Tomorrow

Airfield runways are completed in a hurry with equipment like this. International Diesel TracTracTor, with sheeps-foot roller, working for the Seabees in the South Pacific.—Official U. S. Navy Photo.

INTERNATIONAL INDUSTRIAL POWER

• General U. S. Army unloading scene on the docks at Reykjavik, Iceland.

U. S. Signal Corps Photo

ment served as the basis for the present contract between miners and operators and both groups have cooperated splendidly in effecting this record production.

"We will have lost, estimates indicate, some 30,000 bituminous coal miners in the course of 1944 from natural causes and to the armed services and other industries. Productive capacity of the industry on January 1, 1945, therefore, may be theoretically as much as 45,000,000 tons a year less than it was on January 1, 1944. Continuation of manpower losses would result in further lowering mine capacity during 1945.

"Consideration of only total production and total consumption ignores the fact that many coals are not interchangeable and that there are no substitutes for the high grade coals in many essential uses. Even though production and consumption may appear to balance on paper, because of insufficient output of certain coals, consumers can be short of essential coals.

"The byproduct coke industries, for instance, must have specific coals. Other consumers frequently must use only high grade coals because their plant equipment is unsuited to lower grades, because those coals are needed in the process itself or because of transportation problems.

"Production of the high grade coals is now behind requirements in the Southern Appalachian producing districts. Even though coal is available in other districts, such as Central Pennsylvania and Illinois, because its composition is different, often it cannot be substituted for the Southern Appalachian fuel. Domestic consumers in the southeast and elsewhere, who depend exclusively upon the overburdened southern Appalachian mines must stretch what coal they can obtain because the supply is very limited. Industries too, depending on these coals, must take less than they would like."

Graham Heads North Carolina Road Commission

Former Lt. Gov. A. H. Graham of Hillsboro has been named chairman of the North Carolina State Highway Commission, to which Gov. Robert Gregg Cherry reappointed half of the 10 members. The chairman and the 10 members were appointed for four-year terms expiring May 1, 1949.

Governor Cherry set the salary of the new chairman at $10,000 a year. Heretofore the chairman received $7,500 a year, but a 1945 law permitted the increase, with the approval of the State Advisory Budget Commission.

Members retained on the commission were John G. Clark of Greenville, Dr. Guy V. Gooding of Kenansville, John N. Hackney of Wilson, George W. Kane of Roxboro and T. Max Watson of Forest City.

Named new members were Merrill Evans of Ahoskie, replacing Carroll Wilson of Roanoke Rapids; Dr. Henry W. Jordan of Cedar Falls, replacing D. B. McCrary of Asheboro; Ben Douglas of Charlotte, replacing Charles A. Cannon of Concord; J. Raymond Smith of Mount Airy, replacing Virgil D. Guire of Lenoir; and John A. Goode of Asheville, replacing Percy B. Ferebee of Andrews.

Lead Supply Falls Short of Minimum Requirements

Despite greatly curtailed quotas allowed for the various uses of lead, it is estimated that lead supply, including imports of refined lead, will fall short of minimum lead requirements by 19,000 tons in the first quarter of 1945 and 25,910 tons in the second quarter, Erwin Vogelsang, director of the War Production Board's Tin, Lead and Zinc Division, told the Lead Mining Labor Advisory Committee at a recent meeting.

The estimated minimum requirements for lead in the second quarter of 1945 are 276,910 tons, of which 77,366 tons are allocated for storage batteries, 33,800 tons for cable covering, 26,000 tons for tetraethyl, and 26,000 tons for other chemicals.

British Ship Copper Here Under Reverse Lend-Lease

Leo T. Crowley, Foreign Economic Administrator, said that the British Government, during the first quarter of the current year, made available to the United States under reverse lend-lease, and thus without cash expenditure by us, 30,000 tons of Rhodesian copper, and has agreed to supply to us an additional 42,000 tons under reverse lend-lease during the second quarter. This latter consignment is part of a total of 175,000 tons that we have requested of the

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• **Bullgrader and scrapers rough grade a bomber strip for the Seabees in the Pacific area.**

Official U. S. Navy Photo

British during the remainder of the year. Expansion of some features of the munitions production program within the United States, which has increased our need for copper, caused the assignment at this time and the request for the proposed additional assignment.

This represents a further extension of the British reverse lend-lease commodity program to this country, inasmuch as this is the first Rhodesian copper that the British have made available to the United States under reverse lend-lease. They have, however, previously made copper from Cyprus available to us under reverse lend-lease.

Organize Construction Machinery Committee

The Construction Machinery Manufacturer's Industry Advisory Committee, newly appointed by the Office of Price Administration, held its organization meeting May 1.

Approximately 350 manufacturers of construction machinery whose ceiling prices are established by Revised Maximum Price Regulation 136—Machines, Parts and Industrial Equipment — are represented by the committee.

Members of the committee are: W. E. Miles, Oliver-Cletrac Co., Ohio; Julian R. Steelman, Koehring Co., Wis.; R. K. Stiles, Austin-Western Co., Ill.; W. J. Hazeltine, Buffalo Springfield Roller Co., Ohio; W. Blackie, Caterpillar Tractor Co., Ill.; D. D. Kennedy, Foote Co., Inc., New York; D. M. Burgess, R. G. LeTourneau, Inc., Ill.; Larry Glaser, Littleford Bros., Inc., Ohio; H. Gusman, Wooldridge Manufacturing Co., Calif.

Paul B. Cochran, Buckeye Traction Ditcher Co., Ohio; Kenneth Lindsay,

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• Tractor with trailbuilder building a crossing over the Quoja River on the main track to the forward areas from Finschafen in New Guinea. Heavy flood waters washed the crossing away the previous night.

U. S. Signal Corps Photo

Iowa Manufacturing Co., Iowa; R. W. Newberry, Bucyrus-Erie Co., Wis.; R. T. Harris, Blaw-Knox Co., Pa.; W. B. Greene, Barber-Greene Co., Ill.; George J. Dimond, Insley Manufacturing Corp., Ind.; F. H. Moline, Pacific Car and Foundry Co., Wash.; E. F. Armington, Euclid Road Machinery Co., Ohio; H. R. Meeker, J. D. Adams Co., Ind.

Action Needed in Postwar Highway Planning

With upwards of $160,000,000 available for highway engineering surveys and planning preparation there can be no excuse for any state, county or city not having a shelf of postwar construction projects ready to move when V-day comes, Charles M. Upham, engineer-director of the American Road Builders' Association declared. He pointed out that $100,000,000 was authorized by the Federal-Aid Highway Act of 1944 passed last December, and the balance from the Defense Highway Act of 1941 and the Federal Highway Act of 1943. Much of the earlier authorizations are still available.

"In order that the three billion dollar postwar highway program may do what it is designed to do—rehabilitate our highway system, furnish millions of jobs and stimulate our national economy, we must have plans at the stage where bids can be advertised for at once," Upham declared. He urged immediate action by states and their political subdivisions so that actual work might start when the men of the armed services get home.

"This is one instance where financing is not holding up the job," said Upham. "Foresight provided the necessary funds to cover preliminary planning details and the funds are available to the states. That leaves manpower as the only possible reason. "Some states, with manpower shortages in their highway departments, have successfully used women in the field, at the drafting board and in other technical capacities. Still other states retained individual engineering firms to do the job. College students too have been used effectively, the students receiving credits in their engineering courses and compensation as well. One highway department reported that working, designing and drafting personnel were permitted overtime which meant more plans and more pay. Then too, there are returning servicemen. Even manpower shortages can be overcome," he pointed out.

Mr. Upham cited the fact that it requires twice as long to prepare to build a road as it actually does to build it, and stressed the importance of the planning phase in the overall program. "Any state can tell you how many thousand miles of roads and streets it requires and what it will cost. But the proof of its planning lies in how much of it is on paper," he said.

"Framers of the Federal-Aid Act recognize the necessity for important preliminary steps and made adequate provision for financing them," the American Road Builders' head continued. "Each state knew four months ago what its apportionment would be and certainly its highway needs were obvious long before that. Consequently there can be no valid excuse for delaying planning."

Mr. Upham held that failure to be ready to start work at the cessation of hostilities might bring back the wasteful and ineffectual type of employment known during the depression, day labor and forced account construction. "Every minute lost at the transit or the drawing board may means days of misery and unemployment to some returned soldier or sailor who needs a job," he said.

Award Cement Contract on Roza Division Canals

Award of a $21,293 contract to the Superior Portland Cement Company of Seattle, Wash., for 7,000 barrels of cement to be used in constructing canals and other irrigation works on the Roza Division of the Yakima Project in south central Washington, was announced by R. J. Newell, Acting Regional Director for the U. S. Bureau of Reclamation.

The Roza Division is one of 28 projects in the West cleared for construction by the War Production Board to

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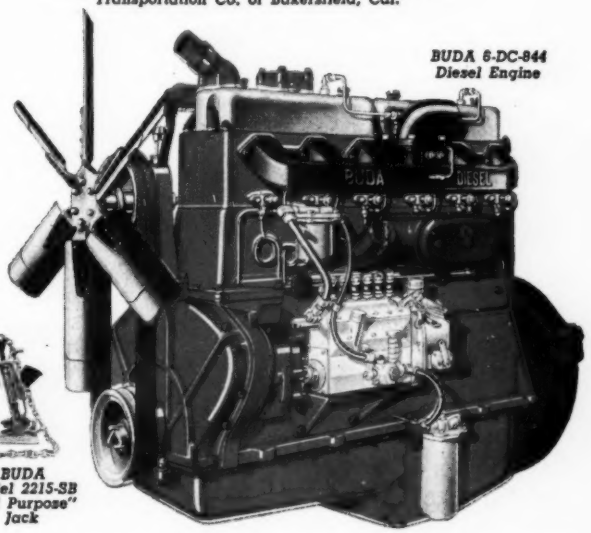

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increase food production. These will bring 243,657 acres of new land under irrigation, and provide supplemental water for 1,172,125 acres now suffering with shortages.

The award followed within six weeks the letting of a $196,075 contract to N. Fiorito Company of Seattle for constructing the remaining 10 miles of the 93-mile long Yakima Ridge (main) canal, which when completed will serve 47,000 acres on the Division. Construction of pumping and other facilities to provide water for an additional 25,000 acres has been halted by the War Production Board.

Construction Engineer Harold T. Nelson said in a progress report March 1 that construction of canals and other facilities approved by the War Production Board under the war food program was 82 per cent complete on that date, although work was started only 15 months before. The main canal is scheduled to be completed next August, he said.

Slate Production Shows Slight Increase in 1944

Slate production in the United States in 1944 amounted to 477,840 short tons valued at $5,004,195 according to figures compiled by the Bureau of Mines, United States Department of the Interior, from reports furnished by slate producers. This was an increase of two per cent in quantity and three per cent in value over 1943 production—468,860 short tons valued at $4,870,237. This small gain was confined almost exclusively to granules and flour. Slate sold as dimension stone, that is, in the form of roofing slates and mill stock, registered declines in almost every category.

Roofing slate sales fell seven per cent in quantity and five per cent in value (89,090 squares valued at $802,179) from the previous all-time low record of 1943 (96,220 squares valued at $841,750).

Sales of mill stock totaled 2,041,210 square feet valued at $715,689; a decrease of 23 per cent in quantity and 24 per cent in value from 1943 (2,644,140 square feet valued at $938,368).

Slate sold for flagging totaled 2,235,960 square feet valued at $203,090, an increase of 10 per cent in quantity and 22 per cent in value compared with 1943.

Sales of crushed slate for roofing granules, and for flour, which is used in a variety of products, amounted to 416,890 short tons valued at $3,283,237, an increase of five per cent in quantity and 12 per cent in value over 1943. The average value of these products f.o.b. mill increased 54 cents per ton for granules and 27 cents per ton for flour.

Warn Utah May Lose Portion of Federal Funds

Governor Herbert B. Maw's veto in March of a bill to restrict the use of Utah motor vehicle registration funds to highway purposes was followed by warnings that the state might lose a portion of its postwar federal-aid road grants and that the state might have to

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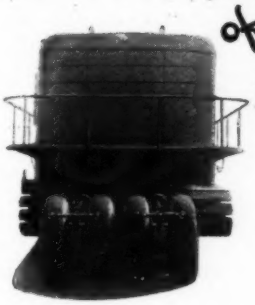

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float bond issues for highway construction.

Congressman J. Will Robinson of Utah, chairman of the House Roads Committee, pointed out that federal—highway legislation provides that federal aid allocations can be reduced by one-third to states diverting automotive tax receipts to non-highway uses. Indicating that such a penalty might be applied to Utah, he said: "That will cost Utah one-third of $5,000,000 right off the bat and perhaps that amount every year."

Ezra C. Knowlton, former chief engineer of the Utah State Road Commission, predicted that Governor Maw's "unsound policy" in diverting motor vehicle funds would force the state to issue bonds to meet its share of the cost of the postwar federal road building program.

Knowlton, now a sand and gravel company executive, said Utah's highway fund diversions already reach nearly $1,000,000, not including the year 1944.

Authorize Vermont Plan For Flood Control

The Federal Flood Control Act of 1944 has been amended to authorize the development of the Vermont plan for flood control in the West River Valley. In place of a single large dam at Williamsville as proposed by the Army Engineers, the Vermont plan calls for eight small dams on the upper West River and its tributaries provided that the work can be done at a total cost of $11,000,000 and provide 75 per cent as much control as would the proposed single dam.

California Plans Roads for 5 Million Cars by 1955

An army of engineers and construction workers and hundreds of bulldozers, draglines, scrapers and trucks will be required for the highway program planned by California, which is proceeding on the expectation of 5,000,000 motor vehicles registered in the state by 1955.

Figures of State Department of Public Works show that highway deficiencies in the next ten years will cost $630,000,000. Plans call for developing about 3,300 miles of major state highways to limited access specifications, of which 2,700 miles would cover the state's two main North-South arteries and five major East-West laterals. About 600 miles of freeways are also planned for the seven metropolitan areas of the state. Financing will be through an additional tax of 1½ cents on gasoline, and bills incorporating the plans are now before the 1945 legislature. This tremendous development is backed by the California Major Highway Development Committee which includes groups representing the Automobile Club of Southern California, the California State Chamber of Commerce, California State Automobile Association, League of California Cities and the State Supervisors' Association.

AGC Wants Construction Volume of 12 Million in First Year After War

Until the war is completely won the needs of the fighting front must come first, but in the meantime "we should not neglect to prepare for the transition to peacetime conditions," Harry A. Dick, of Portland, Oregon, new president of the Associated General Contractors of America, declared.

The AGC has been campaigning for the planning of postwar construction to the contract-letting stage, he stated. This campaign was started last year.

The general goal of the campaign, he said, was to stimulate advance planning of projects sufficient for a rate of construction of $12,000,000,000 annually by the end of the first year after the war—which would provide work and business opportunities for approxi-

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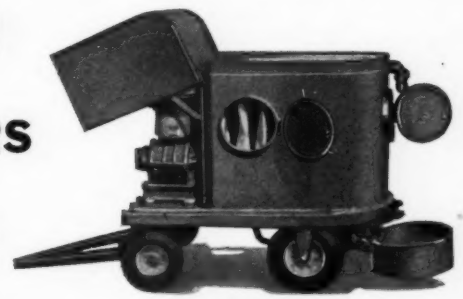


Model IWD

1 Portable units operate through powerful air stream by an effective double separation principle. No dust escapes into the air. Reduces SILICOSIS hazard to safe hygienic limit.

2 When applied to rock drills, SPEEDS UP DRILLING TO 33 PERCENT. Drill steel cuts into fresh rock unimpeded by dust or chips. PROLONGS LIFE OF DRILL STEEL. REDUCES SHARPENING COSTS.

3 Quick detachable hood permits easy inspection of hole and changing drill steel without interference from hood.

4 When applied as industrial unit, collects dust accumulations that are costly and apt to be a hazard both to men and equipment. Keeps your plant, motors and machinery free from harmful dusts.

5 Equipped with Markley-Carter disposal container which permits continuous collection and disposal without closing down the system.

• Write for Bulletin 4402 which describes in detail the advantages of using MARKLEY-CARTER DUST COLLECTOR in your quarry.

RALPH B. CARTER COMPANY
192 ATLANTIC ST., HACKENSACK, N. J. 53 PARK PL., N. Y. 7, N. Y.

mately 2,400,000 men and women at the site of construction, and nearly 5,000,000 others off the site in supplying materials and performing necessary services.

"Forethought and planning are as necessary in building for peace as in building for war," Dick declared. "In both it is a matter of planning to meet a need.

"The need for large-scale construction after the war is obvious—better homes, better industrial and commercial structures and facilities, better highways, new air terminals and huge developments of various kinds for better utilization of our national resources, as rivers and harbors and reclamation projects."

AED Board Meets in Chicago in June

In conformity with ODT travel regulations governing group meetings and conventions, the AED (Associated Equipment Distributors) will hold a meeting at the Edgewater Beach Hotel in Chicago, June 17, 18, 19, to be participated in only by the Board of Directors and several of the Association's key committee chairmen and committee members who have studied problems affecting the Association and distributors and manufacturers of road, highway and heavy construction machinery. Normally, AED's semi-annual meeting attracts approximately 1,000 members.

Re-employment of returning veterans, surplus property disposal and post-war planning will be the principal subjects of reports, resolutions and discussions. AED Directors will discuss ways and means of implementing and effectuating a resolution adopted by the body's entire membership in January pledging themselves "to the best of our ability to provide steady employment to one or more disabled and handicapped veterans of World War II."

OBITUARY

Wallace L. Caldwell

Wallace L. Caldwell, 56, president of Alabama Asphaltic Limestone Company and Southern Vacuum Concrete, Inc., both of Alabama, and Aerocrete Western Corporation of Chicago, and vice chairman of the Southern Research Institute, died May 00 in Birmingham as a result of injuries received in an automobile accident March 21.

Mr. Caldwell was born in Indianapolis and was engineering chemist for the City of Indianapolis for three years before making his residence in Birmingham, Alabama in 1912 when he took a position there as manager of the Pittsburgh Testing Laboratory.

From 1921 to 1925 he served as president of the Kentucky Rock Asphalt Company of Louisville, Kentucky, and from 1925 to 1928 as vice president of the Peoples Light and Power Company of New York. He returned to Birmingham in 1928 to organize the Alabama Asphaltic Limestone Company.

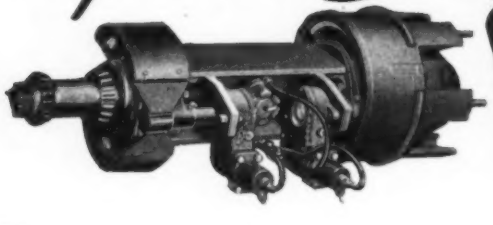
Mr. Caldwell was awarded the Silver Pioneer medal of the National Association of Manufacturers in 1940 in recognition of distinguished achievement in the field of science and invention which has advanced the American standard of living. He organized, and was the first president of the Boys Club of Birmingham and was always active in civic affairs and ready to contribute his services toward any project for the betterment of Birmingham.

Mr. Caldwell was a past president of the Associated Industries of Alabama and the Rotary Club of Birmingham. At the time of his death he was a director of the National Association of Manufacturers and the Associated Industries of Alabama. He was a member of the American Societ yof Civil Engineers, American Chemical Society, American Society for Testing Materials, American Society of Municipal Engineers, American Concrete Institute, Association of Asphalt Paving Technologists, Alabama Engineers, and Birmingham Engineer Club.

He is survived by his widow, Leona Templeton Caldwell; two daughters, Mrs. Glenn Means Tindall of Chicago and Miss Lenore Lyon Caldwell; two brothers, Dumont and Braden Caldwell of Indianapolis, and two grandchildren.

WITH LOADS LIKE THIS...

YOU NEED SAFE, SURE Hydraulic Brakes



JAHN Heavy Duty TRAILERS
Capacities from 5 to 100 TONS

CONTROLLING a massive trailer, fully loaded as this one is, demands reliable brakes that really stop. The new Jahn hydraulic brake application for heavy duty trailers provides smoother, faster braking action, even under the most punishing burdens, with positive, equal brake pressure on all wheels. Uneven terrain has no effect on them—full axle oscillation can take place without any reduction in braking efficiency. There is no possibility of partial application or dragging of brakes, never any added resistance for the prime mover to overcome.

Thoroughly tested in actual service, all Jahn heavy duty trailers are now available with these powerful, fast-acting hydraulic brakes. Make sure your postwar trailer has this added safety factor. Write today for details.

C. R. JAHN COMPANY
1349 WEST 37th PLACE, CHICAGO 9, ILL.

Capacities from 5 to 100 tons . . .
Any axle or wheel combination

Primacord helps us increase efficiency in our operations

It takes fewer men, and less equipment to give even greater production when Primacord is on the job.

Primacord promotes *efficient planning* — places virtually no limit on the number of holes in a shot which may be fired simultaneously.

Primacord promotes *efficient loading* — permits varying loads to match rock strata, yet gives positive detonation to every cartridge in each deck load.

Primacord promotes *efficient rotation* — relieves pressures as front rows shoot a split second ahead of back rows, due to the definite sequence present in its almost instantaneous detonating wave.

Primacord promotes *efficient use of explosives* — secures full power due to its complete detonation of each cartridge.

Primacord promotes *efficient digging* — insures maximum fragmentation in the rock pile for utmost ease in handling.

Five checks on the score card that add up to 100% for Primacord Detonating Fuse.

IN7

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut
Manufactures of
ENSIGN-BICKFORD SAFETY FUSE-SINCE 1836

PRIMACORD-BICKFORD Detonating • Fuse •

NOT in the Contract

Hotel Guest: "Last night I slept like a horse!"

Visitor: "You did?"

Hotel Guest: "Yah. Standing up!"

A Russian, recently returned from America, was telling his friend Boris of his adventures.

"In America," he said, "you drive around in a limousine—for free. You eat dinner in the best hotels—for free. You get all sorts of beautiful clothes—for free. You stay in wonderful rooms—for free."

"All this happened to you?" asked Boris.

"To me, no—but to my sister, yes."

First Marine: "When in China did you take a ride in one of those jinrikishas?"

Second Marine: "Yes, and they have horses that look just like men."

First Hobo (surveying stream of pleasure seekers): "I hate holidays."

Second Hobo: "Yes, makes yer feel common when nobody ain't workin'."

He: "Shall we sit in the parlor?"

She: "No, I'm too tired. Let's play tennis!"

Here's the latest Selective Service physical exam procedure: Hang an anatomy chart on the wall. For every physical defect in the recruit, stick a pin in the chart. Then roll up the chart and run it through the player piano. If it plays "Nearer My God to Thee," reject him.

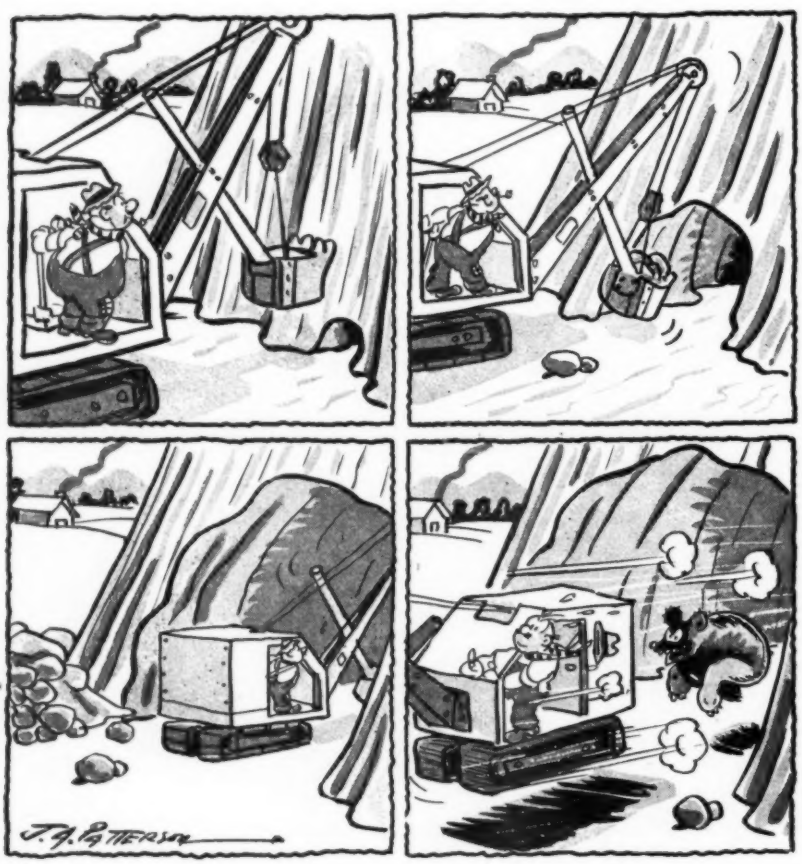
Pfc: "Why, man, I'm the Tac from Tacoma."

Cpl: "Say, I'm the San in San Francisco."

Pfc: "Where are you from, Sarge?"

Sgt: "Astoria."

In the election the girl from the mountains asked for a ballot. "What party do you affiliate with?" she was asked. "Do I have to answer that?" "You do if you want a ballot." "Then I don't want no ballot because the party I affiliates with ain't divorced yet!"



The little guy strutted up to the bar and ordered two whiskies from the husky bartender. He tossed one down his throat and poured the other in his vest pocket.

The process was repeated six times.

"Say," demanded the barkeep, "what's the idea of pouring all that whiskey in your vest pocket?"

"Shut up and mind your own business or I'll knock your block off," the runt snarled.

At that moment a little mouse poked his head out of the pocket and growled, "Yeah, and that goes for your ..... cat, too!"

The American service paper quotes this official announcement on a bulletin board: "All officers wishes to take advantage of the stenographers in the pool, will go to Room 601 and show evidence of their need."

A farmer and a professor were sharing a seat on a train. It was getting lonesome so the farmer started a conversation and they soon became a friendly pair.

"Let's have a game of riddles to pass the time," said the professor. "If I have a riddle you can't guess, you give me one dollar or vice versa."

"All right," replied the farmer, "but as you are better educated than I am, do you mind if I only give 50 cents?"

"O.K.," replied the professor. "You go first."

"Well, what animal has three legs walking and two legs flying?"

"I don't know. Here's a dollar. What's the answer?"

"I don't know either. Here's your fifty cents," answered the farmer.

CO: "Your wife comes to town, I give you a 24-hour pass and you come back 24 hours late. How come?"

GI: "Well, sir, when I got to the hotel, my wife was taking a bath."

CO: "Did that take two days?"

GI: "No, sir, but it took pretty near that long for my uniform to dry."

A young blonde walked into a drug store and timidly approached a clerk. "The baby tonic you advertise; does it really make babies bigger and stronger?"

"We sell a lot of it and we've never had a complaint," replied the druggist.

"Well, I'll take a bottle," said the bride after a moment and went out.

Five minutes later she returned, got the same clerk in a corner and whispered: "I forgot to ask about this baby tonic. Who takes it—me or my husband?"

Pratt's Star Performer

(Continued from page 309)

were cut and used for covering on the bottom and sides of this rack.

Operator Bernstein rigged up a signalling device for his driver by placing a horn at the top in the rear of the cab, just behind the driver when the crane is in over-end working position. A button to sound this horn was placed in the operator's cab and the operator can signal for forward and backward moves by sounding the horn one or two times. Side moves and stops can also be signalled to the driver with this horn.

Another of the Transit Crane crew's innovations was the installation of one-quarter inch corrugated steel mud guards over the rear tandem wheels of the crane. In addition to helping keep the equipment clean it helps to keep mud and dirt out of the revolving frame rack, and roller path.

The Minneapolis company is well pleased with the performance of its Transit Crane and Superintendent Ginsberg is awaiting the time when war-time conditions will allow the addition of at least one more.

A warm sun is now shining and the snow is rapidly disappearing. Spring is back to Minneapolis and it is time for us to get back to the office.

Slugger

(Continued from page 313)

long, pal. Give my best to the guys back in the states when you get back. See you in Tokyo." And the corporal rammed the gears into high and off he went.

Well, that's what the Slugger had to say the day I met him in China. As I watched him lumbering across the field, I guess I felt a little soft about the ugly old bum. I felt, somehow as if I had just been talking to a hero. Maybe he doesn't sound much like a hero, but heroes seldom do.

I'd like to be able to tell you that he'll be back some day. But he won't. The Slugger will never leave China. He'll just stay in there slugging until he falls apart—but I guess that's the way he'd like it.

He'll never march in the Victory Parade. But wouldn't it be some sight to see the battered, tough, old battle-scarred veteran lumbering along with the rest of us! And he'll never have an epitaph except in the hearts of those who knew him. It will read something like this:

"The Slugger. Serial Number 706 Corps of Engineers, U. S. Army A very great guy."

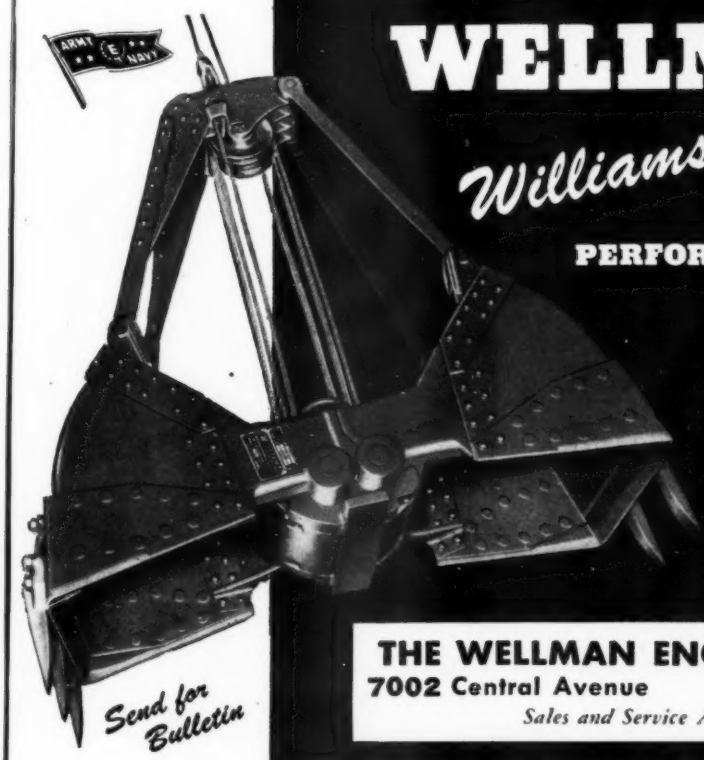
Seabees . . .

(Continued from page 317)

were made from oil drums with the ends cut out and the barrel sections joined together. A borrowed bulldozer roughed the road out. A motor grader, side-tracked from its regular work, cut the side ditches and put the fine grade in. Trucks from the Seabee borrow pit dumped every spare load of coral on the subgrade. The Bucyrus-Erie Bullgrader out of the borrow pit found time to go over and finish the surface.

The first traffic took the place of sheepsfoot rollers ordinarily used. A motor grader hit the top of this road about once a week. By and by the top will take on a dark color, and it will be a first class road. That's how the Seabees do little jobs and dispose of some of the material they are removing.

It is estimated that another million yards can be removed without running out of the hill or having to dig deep enough to encounter ground water. Four months after the job started, the Seabees had averaged slightly better than 200,000 cu. yds. a month and apparently were happy to be working hard at something everybody could see was useful.



WELLMAN

Williams BUCKETS

PERFORM BETTER Longer

Multiple Rope and Power Arm Types · Dragline · Power Wheel · Special Service Buckets · 3/8 to 16½ yd. capacities.

WELDED ROLLED STEEL CONSTRUCTION FOR LOWER MAINTENANCE, LONGER LIFE . . .

Formerly featured only in Wellman custom-built buckets — now in *every* Wellman-Williams Bucket.

Send for Bulletin

THE WELLMAN ENGINEERING COMPANY

7002 Central Avenue • Cleveland 4, Ohio

Sales and Service Agencies in Principal Cities

Notes from the manufacturers

Euclid Road Machinery Company of Cleveland, Ohio, appointed W. W. (Bud) Paape as a Euclid sales representative with headquarters at the main offices of the company. His territory includes Ohio and adjacent states.

Chain Belt Company of Milwaukee announces the appointment of Martin Machinery and Supply Co. as distributors of the complete line of Rex construction machinery in the Knoxville, Tenn., area. The firm is headed by Karl R. Martin who has associated with him John Hay, L. C. Higgs, Houston Brown and Karl R. Martin, Sr.

Worthington Pump and Machinery Corp. of Harrison, New Jersey, announces the addition of Atlas Equipment Co., Pittsburgh, Pa., Carolina Tractor & Equipment Co., Raleigh, No. Carolina, Chicago Construction Equipment Co., Chicago, Ill., Lakesboro Machinery & Supply Co., Muskegon, Mich., Phillippi-Murphy Equipment Co., Minneapolis, Minn., and Olson Manufacturing Co., Boise, Idaho, distributors to their Construction Equipment Department.

Union Carbide and Carbon Corporation of New York, N. Y., announces the formation of a new Metal Chemicals Division of its subsidiary United States Vanadium Corporation. J. A. Holladay was elected a Vice-president and has assumed charge. Production and Sales, under A. J. Gailey, will headquarter at Niagara Falls, N. Y.

Macwhyte Company of Kenosha, Wis. appointed R. P. Tyler General Sales Manager. Tyler was formerly sales manager for A. Leschen & Sons Rope Co. and prior to 1940 in sales and engineering with John A. Roebling's Sons Company. H. E. Sawyer, former general sales manager and vice-president and treasurer of Macwhyte Company, will continue as vice-president and comptroller.

Caterpillar Tractor Co. of Peoria, Ill., announces the resignation of Fred G. Nunneley, Canadian Sales Manager, to become General Manager of the Powell Equipment Company, Limited of Winnipeg, Canada.

Barber-Greene Co. of Aurora, Ill. has announced the appointment of John H. Dykstra as Advertising Manager. Mr. Dykstra, formerly with Mumm-Mullay & Nichols, Inc., Columbus, Ohio, advertising agency, succeeds Blain S. Britton, who has resigned to go into business for himself doing photographic and publicity work in the construction and allied fields.

Wico Electric Co. of West Springfield, Mass., has been awarded the Liberty Mutual Insurance Company Accident Prevention Flag. Presented only to companies whose accident-free records are far above average, the flag represents 1,223,423 consecutive working hours between March 27 and December 11 with no time lost because of accidents. The coveted safety award was made to Edwin H. Vorhees, Wico Vice President in charge of manufacturing.

American Cable Division of American Chain and Cable Co., Inc., Bridgeport, Conn., announces the appointment of Walter E. Moore as New York district sales manager. Mr. Moore, who has been with the company for 18 years, will continue to make his headquarters in New York, N. Y.

Harnischfeger Corp. of Milwaukee, Wis., has appointed Chester O. Barnes as Welding Engineer in the Chicago and Milwaukee territories. C. H. Wyman, Welding Engineer, has been added to P&H's Chicago Branch along with R. M. Ashley, for four years excavator sales engineer in Montana, Idaho, and parts of Wyoming and Washington.

"HERCULES" (Red Strand) Wire Rope

For Every Heavy Duty Purpose

ALL wire ropes do not operate under the same conditions: Some must be extra flexible; some are subjected to excessive wear and stress; there are many uses where a combination of severe conditions must be met.

In order to be suitable for every heavy duty purpose, "HERCULES" (Red-Strand) Wire Rope is made in a wide range of constructions — both Round Strand and Flattened Strand — all of which can be furnished either Preformed or Non-Preformed. A "mis-fit" rope, either in type, construction or quality, will definitely increase operating cost.

Moreover "HERCULES" is made of carefully selected and rigidly tested materials. Modern facilities, long experience and advanced manufacturing methods insure correct fabrication.

When you adopt the Red-Strand as your wire rope guide, you are assured of dependable and economical results.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK • • • 90 West Street
CHICAGO • • 810 W. Washington Blvd.
DENVER • • • 1554 Wazee Street
SAN FRANCISCO • • 520 Fourth Street
PORTLAND • • 914 N. W. 14th Avenue
SEATTLE • • 3410 First Avenue South

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

MISCELLANEOUS EQUIPT.

Marion 4160 Electric Shovel with 4½ or 5-yd. rock dipper, roller bearing M.G. set, 2200 volt, 3 phase, 60 cycle, etc.

Locomotive, 80-ton, 6-wheel, switcher with tender, National Board boiler 200 lbs. pressure, outside valve motion, super heater, air operated fire doors, electric lights; thoroughly modern, in condition for immediate service and delivery.

A. J. O'NEILL
Lansdowne Theatre Bldg. Lansdowne, Pa.
Phila. Phone: Madison 8300

Welding and Cutting Outfits, Torches, Regulators and Gauges, for heavy, medium, and light welding and cutting. Superior Oxy-Acetylene Co., Hamilton, Ohio.

B-Erie 50B steam 2¼-yd. shovel, 100% rebuilt.
Porter 18-ton and Vulcan 17-ton steam 36" gauge S/T locomotives, 100% rebuilt, tested.
Milwaukee 8-ton gas locomotive, 36" ga., A-1.
Vulcan 18-ton steam S/T locomotive, 42" gauge.
Whitcomb 8-ton gas locomotives (4), 24" gauge.
Baldwin and Lima steam logging locomotives, 58, 56, 50, 42 and 40 tons, std. gauge, (5).
Marion electric 4-yd. and 3-yd. shovels.
P&H 206B crane, gas, 40' boom, ¾-yd. bkt.
Page 2-yd. Diesel dragline, 65' boom.
American steam railway ditcher-crane, 28' bm.
Fairbanks-Morse 240 HP Diesel engine, Model 44.
Gyratory crushers, 27", 16"; 7" Newhouse.
Jaw Crushers: 24"x50", and 24"x36".
Cedar Rapids travel type blacktop plant.
Euclid 6-yd. bottom dump crawler wagons (8).
Hydroelectric gen. plants, 35', 65', 150' heads.
Gold placer mining dredge, elec., 7½-cu. ft.
Bucyrus 30' shovel boom only, for 50B machine.
Boiler tubes, 236—1¾"x5', ferrules, (new).

H. Y. SMITH CO.
828 N. Broadway Milwaukee 2, Wis.

FOR SALE

Allis-Chalmers Roll Crusher type XX Size 52"x24"; weight 142,000 lbs.; shaft and core only 18,800 lbs; swivel head 11,250 lbs.; base 29,000 lbs.; large pulley 19,000 lbs.; small pulley 4,000 lbs. Cost new $21,250. Condition good with exception two spokes broken in large pulley 22"x10' but repaired. Have half section of spare pulley in good shape. Other section of this spare has broken spoke but is repaired. Small pulley is 14"x4'. Address inquiries to:

F. W. Evans Mines
301½ Joplin Street Joplin, Missouri

2T Bucyrus-Monighan dragline.
30B Bucyrus-Erie steam shovel.
18—Heavy duty International trucks with 8-10-yd. dump bodies.
The right equipment for pit, quarry and stripping operations.
Prices on request.

Stevens Bros. Coal Co.
St. Paul 1, Minn. and Garrison, No. Dakota

CONTRACTORS ATTENTION!

Let us sell your used equipment for you! We have over 5,000 listings in the United States of Bona Fide Contractors who are looking for equipment. Perhaps you can replace your old equipment sooner than you think. Give us a try! We can find responsible buyers for you. Write for full particulars to CONTRACTORS SERVICE, 103A N. Brand Blvd., Glendale 3, California.

SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS

2—⅝ cu. yd. Skimmer Scoop Dipper—10-B.
2—½ cu. yd. Drag Shovel Dipper—17-B.
3—½ cu. yd. Skimmer Scoop Dipper—17-B.
1—¾ cu. yd. Welded Dipper—21-B.
1—1 cu. yd. Drag Shovel Dipper—29-B.
1—1¼ cu. yd. Cast Front Dipper—GA-3.
1—1¼ cu. yd. Drag Shovel Dipper—33-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper—42-B.
1—1½ cu. yd. Snow Loading Dipper—10-B.
1—1½ cu. yd. type 4 Med. Duty Dipper.
1—2 cu. yd. Rock Dipper—75-B.
1—2¼ cu. yd. Inserted Type Dipper—50-B.
1—2¼ cu. yd. Inserted Type—55-B.
1—2½ cu. yd. All Cast Dipper—55-B.
1—3½ cu. yd. Coal Loading Dipper—75-B.
1—4 cu. yd. Type IV Medium Duty Dipper—100-B.

F.O.B. Works

Write for any further information desired.

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

1¼-yd. and 1½-yd. shovel crane combination machines.
1-yd. and 1¾-yd. dragline buckets.
65-ft. crane or dragline boom and fairleads.
2-yd. dragline (rental only). Box 3110

FOR SALE
ALL OR IN PART

SAND AND GRAVEL PLANT INCLUDING JAW CRUSHER, GYRATORY CRUSHER, CONVEYORS, VIBRATING SCREENS, SAND CLASSIFIERS, EXTRA HEAVY SCRUBBER, WATER PUMPS, SAND PUMPS, FEED-O-WEIGHTS, WEIGHTOMETERS, TRESTLE AND TRIPPER AND AUXILIARY EQUIPMENT.

ALSO

APPROXIMATELY 9 MILES OF CONVEYOR COMPLETE WITH BELTING, PULLEYS, TROUGHING AND RETURN IDLERS AND DRIVE EQUIPMENT.
ALL OFFERED SUBJECT TO PRIOR SALE.

FOR PARTICULARS WRITE

COLUMBIA CONSTRUCTION CO., INC.
BOX 579, REDDING, CALIFORNIA
TELEPHONE—REDDING 1440

1—Hercules JXA, 6 cylinder 3⅜" x 4¼" gasoline engine; hand starting equipment. Complete with all accessories except radiator. Located Chicago. Box 3094

FOR SALE
REBUILT AND GUARANTEED EQUIPMENT

ELECTRIC WELDERS

3—150 amp. Lincoln vertical electric driven
1—175 amp. same
1—300 amp. Lincoln gasoline engine driven
2—200 amp. same
1—200 amp. Wilson same

WAGON DRILLS

1—Worthington on 3 steel wheels
1—I-R on 3 steel wheels
1—Cleveland on 2 Pneumatics
(1 small Pneumatic tire in front missing)

SPECIAL BARGAIN
SULLIVAN COMPRESSOR

1—310 ft. displacement single stage gasoline engine driven Sullivan air compressor mounted on 4 solid tired wheels—Rebuilt 6 months ago. On rental one month. Excellent Condition.

PRICE—$950.00 F.O.B. K. C., Mo.

MACHINERY & SUPPLIES COMPANY
2000 Walnut Street Victor 2512
Kansas City 8, Mo.

Used contractors' equipment including: 1 Caterpillar tractor; 5 scrapers; 1 grader; 1 steam hammer; 1 model 372 Marion shovel; 1½-yd. dipper; 5-yd. dragline bucket; 3 air compressors; 1 blower; 1 grout mixer; ventilating pipe; 1 single drum mine hoist; 7 light plants; 2 International 100 H.P. 60 KUA generator sets; 160 H.P. Waukesha gas power unit.

Above equipment is located in Middle West and is offered subject to prior sale.

Box 3107

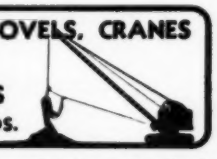
Class 14 Dragline No. 3562. Steam power. Caterpillar mounted. 70' boom; 2 yd. bucket. Located near Chicago. Available immediately. Box 3097

DRAGLINE ATTACHMENT

Removed from 75-B Bucyrus-Erie Electric Shop No. 11595. 2 Piece 60' lattice boom. Capacity 40 tons at 20'. Complete with control motor, drum and fairleads. Immediate shipment.

ATLANTIC EQUIPMENT COMPANY
503 Broad St. Station Bldg. Phila. 3, Pa.
(Rittenhouse 8583)

SMALL SHOVELS, CRANES AND DRAGLINES UP TO 2½ YDS.



One Model 50-B Bucyrus-Erie Steam Dragline including 60' boom, 1½ cu. yd. bucket, shop number 9691, new 1928. Boiler needs refluing. Box 3095

50-B Electric Dragline No. 5084. 60 cycle, 3 phase, 440 volt. 60' boom; 1½ yd. bucket. Near Chicago. Available immediately. Box 3096

For Sale or Rent
Universal ½-yd. truck crane.
George Riemer
2900 Armitage Avenue Chicago 47, Ill.

One Model 101 Lima 1¼ cu. yd. shovel, shop No. 110 powered with Waukesha gasoline engine. Box 3108

Bucyrus-Erie 43-B diesel dragline equipped with 60' boom, D-13000 Caterpillar engine and 1½ cu. yd. dragline bucket. Good condition. Located Oregon. Box 3108

WANTED

Wanted to Buy
Shovel front for P&H Model 255

Spencer Construction Company
Carrollton, Texas

SHOVEL FRONT FOR OSGOOD STEAM SHOVEL 29

Hugo Neu
31 Nassau St. New York 5, New York

WANTED

1½-yd. gas or diesel shovel-dragline.
2 to 2½-yd. crane or dragline. Box 3082

Two experienced highway engineers seek backing for airport, highway and sewer work. Equipment and jobs available. Silent or working partnership agreeable.
Box 3099

Two wheel Hydraulic Scraper, capacity 2.5 to 3-cu. yds. struck measure, for use with Caterpillar D4 tractor. Box 3109

HELP WANTED

CRANE OPERATOR WANTED

Experienced crane operator to work in Milwaukee, Wis. Must be familiar with P&H or Koehring equipment and be able to make minor repairs. Good, steady working conditions. WMC rules.

F. A. Howe, Superintendent, Fall Brook Coal Co., Antrim, Tioga County, Pennsylvania, has steady jobs available for operators and cranemen experienced on 320-B steam shovel.
Box 9244

POSITIONS WANTED

Dragline operator with 27 years' experience on various machines. Familiar with Bucyrus-Erie equipment. Good on repairs. 52 years old; good health. Married. Box 9241

New trade literature

Title: "Speaking of Preformed in Mechanized Warfare"
Subject: A 36-page book that lists and explains a few of the uses (86) to which wire rope has been put in World War II. Graphically portrays these uses in 90 very interesting photographs with explanatory captions.
Where to Get: Preformed Wire Rope Information Bureau, 520 N. Michigan Avenue, Chicago 11, Ill. (Free)

Title: "Motor Truck Facts"
Subject: The extent to which warfare has become automotive combat is shown in this 56 page report outlining both military and civilian production and use for 1944. Performance of trucks on the home front, gasoline consumption, and the number of units in the construction industry are listed. The booklet contains a summary of recommendations for basic truck and highway standards as a means to end interstate shipping conflicts.
Where to Get: Automobile Manufacturers Association, 830 Transportation Building, Washington 6, D.C. (Free)

Title: Engine Room Operator's Guide
Subject: A book designed primarily for the Navy for use in the engine room of ships is divided into four sections on the care of General Motors Diesel engines. Each section is profusely illustrated and instructs the operator in the progressive steps he must take to maintain each engine daily, every 100 hours, 500 hours, and 1000 hours. Each page is treated with acetate to resist water and oil. Special tabs help locate specific subjects quickly. Each engine part, its function, operation, maintenance, and lubrication, inspection, and adjustment are clearly presented.
Where to Get: General Motors Corporation, Detroit Diesel Engine Division, Detroit 23, Michigan.

Title: "You and the Ex-Service Man"
Subject: The service man who comes back for a job as a machine operator needs special handling to make him an efficient peace-time worker. This little book tells how to handle the ex-serviceman problem in 38 instructive pages. Subjects covered include Company Policy, The Interview, Getting Back To the Job, and Ten Danger Signs. A very helpful booklet for every employer.
Where to Get: John A. Roebling's Sons Co., Trenton 2, N. J.

Title: "'Miracle' Welding Process for Maintenance"
Subject: Solving maintenance welding problems are discussed in this new folder that describes the procedures to follow in using Eutectic's low temperature weld rods. The advantages of low temperature welding of steel, aluminum, bronze, cast iron, etc., are stated along with suggestions for salvaging gears, lugs, drill shanks, tubing, shafts, and many other items.
Where to Get: Eutectic Welding Alloys Company, 40 North St., New York 13, N. Y. (Free)

Title: "Suggestion Plan Handbook"; "Partners in Industry"
Subject: A generously illustrated 40-page handbook contains the details of The Cooper-Bessemer Corporation recently adapted Suggestion Plan which has brought forth hundreds of recommendations for increased efficiency and reduced production costs. The booklet covers all phases of the award system including directly-traceable production savings and "intangible" savings. The 6 x 4½ inch booklet is a companion piece to "Partners in Industry" which has been distributed to all new employees.
Where to Get: The Cooper-Bessemer Corporation, Mount Vernon, Ohio. (Free)

Title: "Engineering Survey Reports"
Subject: A 16-page booklet listing available surveys as prepared by J. J. Berliner & Staff research specialists. One section of the booklet covers Mines and Mining Reports while other sections include reports available on Electric Motors, Dump Cars, Materials Handling Equipment, Bridges, Plastics, Machinery, Non-Ferrous Metals, and many other subjects.
Where to Get: J. J. Berliner & Staff, 212 Fifth Avenue, New York 10, N. Y. (Free)

Title: "How to Handle It"
Subject: Bulletin No. 462 describes Rex apron and pan feeders and conveyors for coal, coke, ore, cement, rock, chemicals, bulk parts, and many other materials handling. The bulletin contains design details, cross sections, capacity tables, and specifications.
Where to Get: Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis. (Free)

Title: "Stabilizing the Construction Industry"
Subject: Balancing the national economy at full employment levels will be accomplished by stabilizing the construction industry as outlined in this 38 page pamphlet prepared by Miles Colean, construction authority, in close consultation with agriculture, business, and labor committees. The report urges that factors which have made construction a major contribution to economic instability should be removed.
Where to Get: National Planning Association, 800 21st St., N.W., Washington 6, D. C. (Twenty-five cents)

Title: "19 Reasons Why it is the Dominant Drive of Industry".
Subject: This is a primer-like presentation of the basic advantages of a Multiple V-Belt Drive, prepared under the direction of the Engineering Research Committee of the Association. The illustrated booklet of 16 pages, offers the 19 reasons why this type of drive has become the efficient, dominant drive within only a decade and a half.
Where to Get: Multiple V-Belt Drive Association, 140 South Dearborn Street, Chicago 3, Illinois. (Free)

Title: "Pioneers for 50 Years"
Subject: The half-century of its business existence is told in this 16 page booklet complete with colored photographs and drawings depicting the growth from 1872 of The Cleveland Pneumatic Tool Company. It is a story of "what can happen in this great, free country and nowhere else."
Where to Get: The Cleveland Pneumatic Tool Co., Cleveland 5, Ohio (Free)

Title: "Proceedings of the Highway Research Board"
Subject: Although Volume 24 will not be published until early summer, mimeograph copies of the research papers to appear in the volume are available while the supplies last. Highway Design, Materials and Construction, Maintenance, Soils Investigations, etc., are the broad subjects covered. A detailed list of topics may be obtained free and a summary bulletin presenting brief synopsis of all the papers will be mailed at fifty cents per copy.
Where to Get: Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C.